



1963

Oil and Gas Developments in Pennsylvania in 1962

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF INTERNAL AFFAIRS
Genevieve Blatt, Secretary

TOPOGRAPHIC AND GEOLOGIC SURVEY
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PENNSYLVANIA GEOLOGICAL SURVEY
FOURTH SERIES
HARRISBURG

1963

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OIL AND GAS DEVELOPMENTS IN PENNSYLVANIA IN 1962

By

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ABSTRACT

Exploration in Pennsylvania during 1962 resulted in the discovery of 1 new gas field, 3 new gas pools, and 1 deeper gas pool. One of the new gas pools was discovered by reactivating an old well, formerly abandoned as a dry hole, and fracturing the producing horizon. Other fields and pools were extended by development drilling.

The outstanding discovery was the Five Forks Field in Bedford County in a highly folded area of the Valley and Ridge Province. Other important discoveries were the Kastle Pool in the Medina play in Crawford County, the Newfield Pool on the Harrison anticline in Potter County, the Hribal Pool on the northwestern flank of the Chestnut Ridge anticline in Westmoreland County, and the Kahl Pool on the Fayette anticline in Westmoreland County. All of the discoveries were in beds of Middle Devonian Age or older. The greatest amount of deep drilling (Middle Devonian or older) occurred in the Whippoorwill Field in Elk and Cameron Counties where 15 gas wells and 3 dry holes were completed during the year.

During 1962 there were 668 new wells drilled and 40 wells deepened. Of the 668 new wells, 630 were in proven fields, and 38 were exploratory tests. Included in the 38 exploratory tests is a reactivated well which discovered a new pool and an unsuccessful shallow (Upper Devonian or younger) wildcat, the remaining 36 wells were all deep wildcats. Of the 630 proven-field wells, 341 were drilled outside of underground gas storage and secondary-recovery projects, 286 wells in secondary-recovery projects, and 3 wells in gas storage fields. Of the 341 development wells outside secondary-recovery projects, 97 were oil wells, 189 gas wells, and 55 dry holes. The total footage drilled during the year was 1,716,482 ft.

Exploratory tests totaled 38, drilling a total of 235, 146 ft. of hole. Of the 38 exploratory tests, 5 were successful, and 33 were dry, giving a success ratio of 1 in 7.6.

Oil pipeline runs totaled 5,238,000 bbls. or a decrease of 6.1% from the 1961 figure of 5,580,000 bbls. Proved oil reserves as of Dec. 31, 1962 were estimated at 97,210,000 bbls. Gas produced totaled 87,308,000 MCF as compared with 98,318,000 MCF in 1961. Gas reserves were estimated at 1,181,485,000 MCF at the end of the year. The total reservoir capacity for the storage of natural gas in Pennsylvania is 512,100,000 MCF.

Seismic crews logged 83 weeks during the year. This is a decrease of 38% from the seismic activity shown in 1961. Gravity crews logged 7 weeks in Susquehanna, Lackawanna, and Monroe Counties. Geological field parties were also active especially in the Valley and Ridge Province.

INTRODUCTION

The 1962 oil and gas developments for the state are summarized in this publication. The skeletal logs of the deep wells (those which reached rocks of Middle Devonian age or older) drilled during the year are shown in Table 8 and are supplementary to those published in Bulletins M31, M39, and M45, and Progress Reports 158 and 160 of the Fourth Series of the Pennsylvania Bureau of Topographic and Geologic Survey. Skeletal logs of the deep wells drilled prior to 1950 and other information on Pennsylvania's oil and gas activities up to that time are to be found in Bulletin M31; similar information for the 1950 to 1954 period was published in Bulletin M39, for the 1955 to 1959 period in Bulletin M45, and for the years 1960 and 1961 in Progress Reports 158 and 160. The shallow-sand (Upper Devonian or younger) oil and gas developments are described in Bulletin M45 and Progress Reports 135, 139, 143, 144, 147, 150, 151, 154, 155, 157, 158 and 160 of the Survey.

Listed in Table 9 are the deep wells from which drill cuttings were collected during the year. A complete list of drill cuttings on file with the Survey may be obtained from the Survey's "Catalogue of Deep Well Samples" (I. C. No. 16) as well as from the supplemental lists published in Progress Reports 157, 158, 160, and on Table 9 of this publication.

The oil and gas industry in Pennsylvania drilled more deep wells in 1962 than in 1961. Out of 102 deep wells (Middle Devonian or older) drilled during the year, 36 of the wells were wildcats. This is one less wildcat than was drilled in 1961. Crawford and Erie Counties in northwestern Pennsylvania had the greatest density of deep drilling with 17 deep wells completed in each county. Cameron County was second with 16 deep wells. A wildcat in Bedford County discovered the Five Forks Field, the only gas field found during the year. The 102 deep

wells drilled during 1962 are 15 more than the deep wells drilled in 1961. This is an increase of about 18%. The 102 deep wells consisted of 56 gas wells, 2 gas storage wells, and 44 dry holes. A reactivated well not shown in the above total discovered one of the year's new pools. Two other old deep wells were reactivated and drilled deeper. The total deep footage, including the two old wells drilled deeper, amounted to 583,288 ft. Rotary tools completed 81 deep wells during the year, most of them with air rotary, while 21 were completed with cable tools.

Drilling activity in the Shallow-sand (Upper Devonian or younger) territory of Western Pennsylvania showed a decrease of 5%. Crude-oil prices remained the same throughout the year. The price of a barrel of Bradford crude oil was \$4.63. There were 564 shallow-sand wells completed in 1962. The total shallow footage drilled, including 38 wells deepened was 1,133,194 ft.

TABLE 1. Deep and Shallow Well Completions Summary,
Pennsylvania, 1962*

Completions	Oil	Gas	Dry	Total	Percent Successful
Exploratory tests	0	5 **	33	38	13
Development wells*	97	189	55	341	84
Totals	97	194	88	379	77

*Does not include wells drilled in connection with underground gas storage or secondary-recovery operations.

** Includes the Lyle Tarbox in Potter County which was an old well reactivated discovering the Newfield Pool.

A classification of the wells, exclusive of those drilled for gas storage and secondary-recovery purposes, is given in Table 1, and oil and gas production is shown in Table 2.

The production in the oil and gas fields of the Commonwealth amounted to 5,238,000 bbls. of crude oil during the year and 87,308,000 MCF of gas. The proved recoverable reserves on December 31, 1962, were 97,210,000 bbls. of crude oil and 1,181,485,000 MCF of gas. The total reservoir capacity for storage of natural gas in Pennsylvania is 512,100,000 MCF. The gas figures are those published by the American Gas Association.

The Pennsylvania Game Commission leased 4517 acres of State Game Lands in 1962 for the exploration of oil and gas. The rental bid ranged from \$0.50 to \$2.11 per acre with royalties of \$0.04 per MCF for gas and 1/8 royalty for oil. A bonus of \$26,399.51, which covers the first year's rental, was paid on 3997 acres. Six wells were drilled on the State Game Lands during the year; 3 were gas wells and 3 were dry holes. At the end of 1962 the Pennsylvania Game Commission had leased land totaling 22,992 acres consisting of 25 leases. On 11 of the leases there were 14 productive gas wells.

TABLE 2. Production in Pennsylvania, 1962

	1961	1962	Cumulative Total to 12/31/62	Reserves 12/31/62
Oil (bbls.)	5,580,000	5,238,000	1,241,210,000	97,210,000
Gas (MCF)	98,318,000	87,308,000	7,596,046,000	1,181,485,000

The Pennsylvania Department of Forests and Waters during 1962 offered 17 tracts totaling 67,229 acres by regular bidding procedures. Acceptable bids were received on a total of 63,620 acres on 16 tracts. Two leases bid on the old lease form drew bids ranging from \$3.66 to \$7.33 per acre and averaged \$5.49 per acre per year, with a royalty of \$0.04 per MCF. There were 14 leases bid on a newly adopted bonus bid lease, which drew bids ranging from \$1.02 to \$10.13 per acre for the first year (average \$3.60 per acre) and required a royalty of \$.04 per MCF. \$232,196.10 was realized from the Department's lease offerings. Of the total acreage offered 78% was located in the Valley and Ridge Province in an area where the Oriskany Formation is presumed to be absent and a Gatesburg Formation, or 8500-foot test, (whichever is shallower) is required. All but 6% of this acreage was bid on. A total of 5 wells were drilled during the year on Forests and Waters land, resulting in 5 dry holes. A total of 11 seismic survey permits were issued to 6 different companies who conducted operations in 11 counties on 9 structures.

Seismic crews logged 83 weeks during the year. This is a decrease of 38% over the seismic activity shown in 1961. Gravity crews logged 7 weeks in Susquehanna, Lackawanna, and Monroe Counties. Geological field parties were also active, especially in the Valley and Ridge Province.

At the close of the year Kerr-McGee Oil Industries announced an interesting wildcat. The well, No. 1 Mary C. Martin, is to be drilled

on the Wills Mountain anticline in Harrison Township, Bedford County. The wildcat commenced drilling in the Upper Ordovician with a projected depth of 10,000 ft. to the Lower Ordovician. The nearest production is 13 miles to the southeast in the Five Forks Field (Oriskany sand) discovered in 1962.

The alcohol-flood experiment on leases owned by South Penn Oil Company in the Bradford Oil Field is still continuing. Isopropyl alcohol was injected into the Bradford Third Sand, followed by water. Other than a slight showing of alcohol in some of the produced water there is nothing to report on this project. The company will probably drill a well this summer within the project limits and core the Bradford Third Sand. The thermal experiment in the First Sand of the Middle District near Grand Valley, Warren County, by Quaker State Oil Refining Corporation has been abandoned. The information obtained from this first try in the Penn Grade Area is now being used by the same company in a second experiment. The sand this time is the Second Venango in the Franklin area.

The active drilling in the Warren area has triggered interest in the favorable economics of hydraulic fracturing of the Upper Devonian sandstones in the old fields of Western Pennsylvania. It is anticipated that exploration activity in these rocks will be given greater emphasis by many operators during 1963.

ACKNOWLEDGMENTS

The writers acknowledge the cooperation, in the preparation of this review, of Donald O. Kauss, the Bradford District Producers Association, and the Northeastern Gas and Oil Scouts. Virginia Fairall and Lillian Heeren of the Pennsylvania Bureau of Topographic and Geologic Survey did the drafting and assisted with the compiling of the data.

SHALLOW-SAND EXPLORATION AND DEVELOPMENT

Table 3 shows the shallow-sand (Upper Devonian or younger) well completions in western Pennsylvania exclusive of those drilled in connection with underground gas storage or secondary-recovery oil operations. A total of 602 shallow development wells were drilled during the year (including 38 wells drilled deeper) which is 20 less than the 622 shallow wells drilled in 1961. Of the 602 wells, 137 were gas, 97 oil, 1 gas storage, 43 dry holes, 286 were drilled in connection with secondary-recovery operations, and 38 wells were drilled deeper. The total footage of the new and deepened wells was 1,133,194 ft. Table 4 shows the results of deepening 35 shallow-sand wells in 1962. Three other wells were deepened in secondary-recovery operations. The

TABLE 3. Shallow-Sand Well Completions in Pennsylvania, 1962*

	TOTAL		GAS		OIL		DRY	
	No. of Wells	Aver. Total Depth (Feet)	No. of Wells	Aver. Init. Open-Flow (MCFPD)	Aver. Total Depth (Feet)	No. of Wells	Aver. Init. Prod. (BOPD)	Aver. Total Depth (Feet)
Allegheny	1	2198	-	-	-	1	1	2198
Armstrong	35	3116	29	469	3156	1	1 1/2	1594
Beaver	1	1346	-	-	-	-	-	-
Butler	10	1883	7	110	1750	1	2	1891
Clarion	25	2406	22	216	2592	2	-	1009
Clearfield	6	3189	4	179	3153	-	-	-
Crawford	4	1027	-	-	-	3	1/2	674
Elk	9	2207	2	24	2227	5	2	2027
Fayette	6	1375	2	970	1443	-	-	-
Forest	11	1449	2	47	1112	4	3 1/2	1273
Greene	3	648	-	-	-	-	-	-
Indiana	33	3387	31	709	3385	-	-	-
Jefferson	4	3021	3	415	2990	-	-	-
McKean	5	1667	4	56	1822	1	10	1048
Mercer	3	1119	2	64	1144	-	-	-
Potter	3	1701	1	-	1245	-	-	-
Venango	20	831	-	-	-	20	2 1/2	-
Warren	61	961	1	-	507	59	27	958
Washington	2	3344	1	60	1690	-	-	-
Westmoreland	35	3368	26	547	3423	-	-	-
Total	277	2157	137	351	2912	97	19 1/2	1013
						43		2368

* Does not include wells drilled in connection with underground gas storage or secondary-recovery oil operations.

TABLE NO. 4 Shallow-Sand Wells Deepened in Pennsylvania, 1962 *

	TOTAL		GAS		OIL		DRY	
	No. of Wells	Aver. Amt. Deepened (feet)	No. of Wells	Aver. Init. Open-flow (MCFPD)	Aver. Amt. Deepened (Feet)	No. of Wells	Aver. Init. Prod. (BOPD)	Aver. Amt. Deepened (Feet)
Allegheny	2	700	2	435	700	-	-	-
Armstrong	18	1009	18	205	1009	-	-	-
Butler	1	700	1	-	700	-	-	-
Clarion	4	1218	4	15	1218	-	-	-
Elk	1	200	-	-	-	1	-	200
Indiana	5	1785	5	853	523	-	-	-
Jefferson	2	302	1	19	238	-	-	366
Westmoreland	2	1296	1	3	2093	-	-	500
Total	35	1070	32	278	965	1	200	433

* Does not include wells drilled in connection with underground gas storage or secondary-recovery oil operations.

three columnar sections in Figure 1 show the stratigraphic positions of the Upper Devonian and younger oil and gas sands of western Pennsylvania, from the southwest to the northeast along the trend of the producing belt.

The 137 new gas wells gauged a combined total initial open-flow capacity of 65,525 MCFPD compared with 67,357 MCFPD from the 135 gas wells completed in 1961. In those wells where hydraulic fracturing was utilized, the open-flow gauges obtained after stimulation were used in computing the combined totals.

During completion, reservoir fracturing techniques were applied to 96 of the 137 new gas wells. Statistics indicate that these wells yielded a combined initial open-flow capacity of 50,257 MCFPD after fracturing and a combined initial open-flow capacity of 1903 MCFPD before fracturing. Of the 32 gas wells deepened, 21 were stimulated by hydraulic fracturing. The combined initial open-flow capacity of the fractured wells was 8025 MCFPD after fracturing, as compared with a total initial open-flow capacity of 640 MCFPD before fracturing. The 97 new oil wells completed in 1962 showed an average initial production of 19 1/2 BOPD as compared with the average initial production of 3.14 BOPD gauged by the 43 new oil wells completed in 1961.

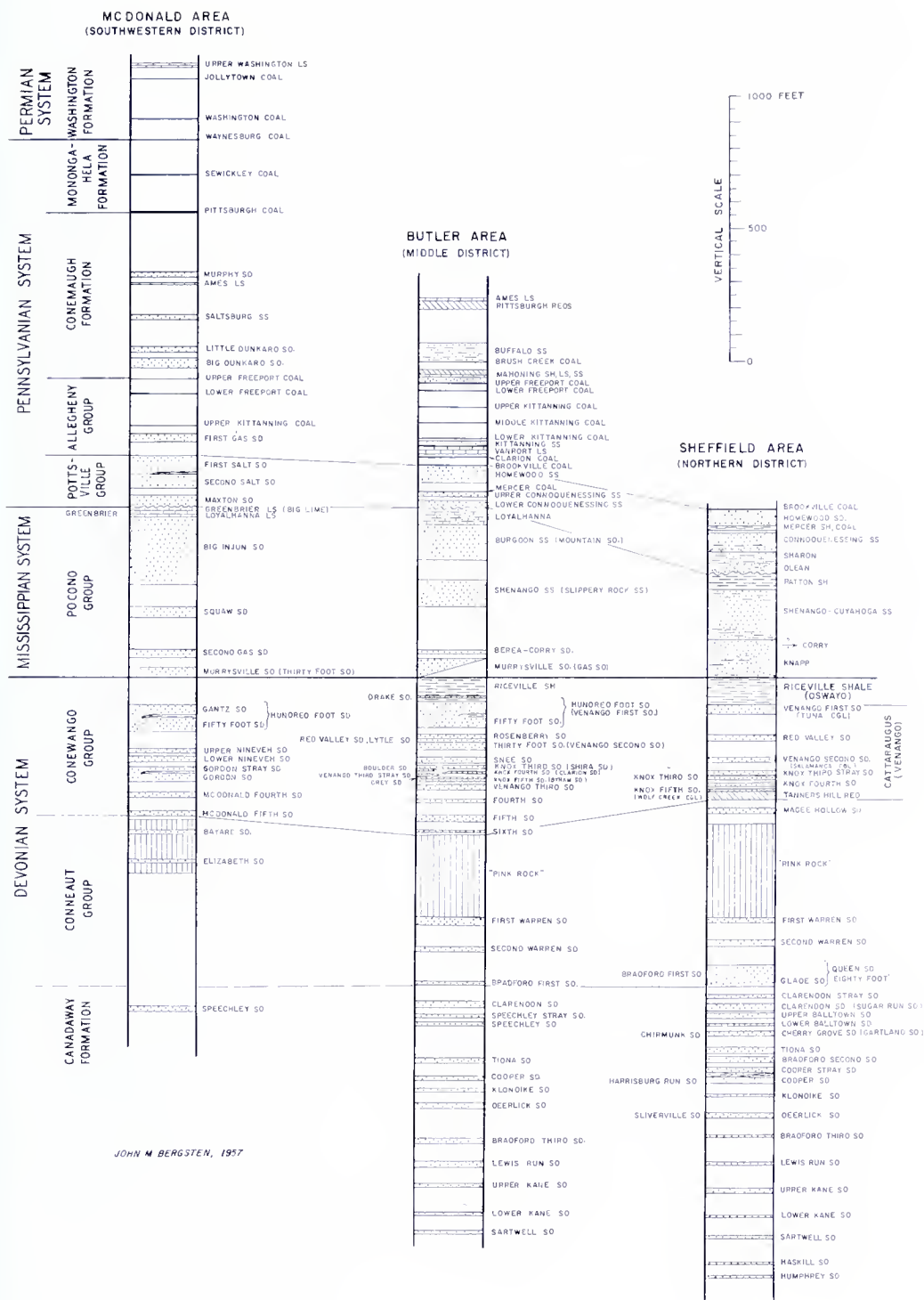
SHALLOW-SAND GAS DEVELOPMENTS

During 1962, exploration and development of the shallow gas fields of western Pennsylvania was confined mainly to the Speechley, Balltown, and Bradford sandstones. Figure 2 shows the location of all wells drilled for gas in 1962 in Armstrong County and large portions of Westmoreland and Indiana Counties.

During 1962, the greatest activity in the shallow gas belt of Pennsylvania occurred in Indiana County. Thirty-one new gas wells were completed in this county, of which 28 were fractured. Stimulation raised the combined initial open-flow capacities of these 28 wells from 750 MCFPD to 17,549 MCFPD. During 1962, 29 new gas wells were drilled in Armstrong County, 26 in Westmoreland County, and 22 in Clarion County. Only one new gas storage well was reported this year. It was drilled in the Blacktown gas storage field in Mercer County. No new shallow-sand gas fields or pools were discovered during 1962 in Pennsylvania.

SHALLOW-SAND OIL DEVELOPMENTS

In 1962, 97 new oil wells were completed in Pennsylvania. This represents an increase of 54 wells over the 43 wells drilled in 1962.



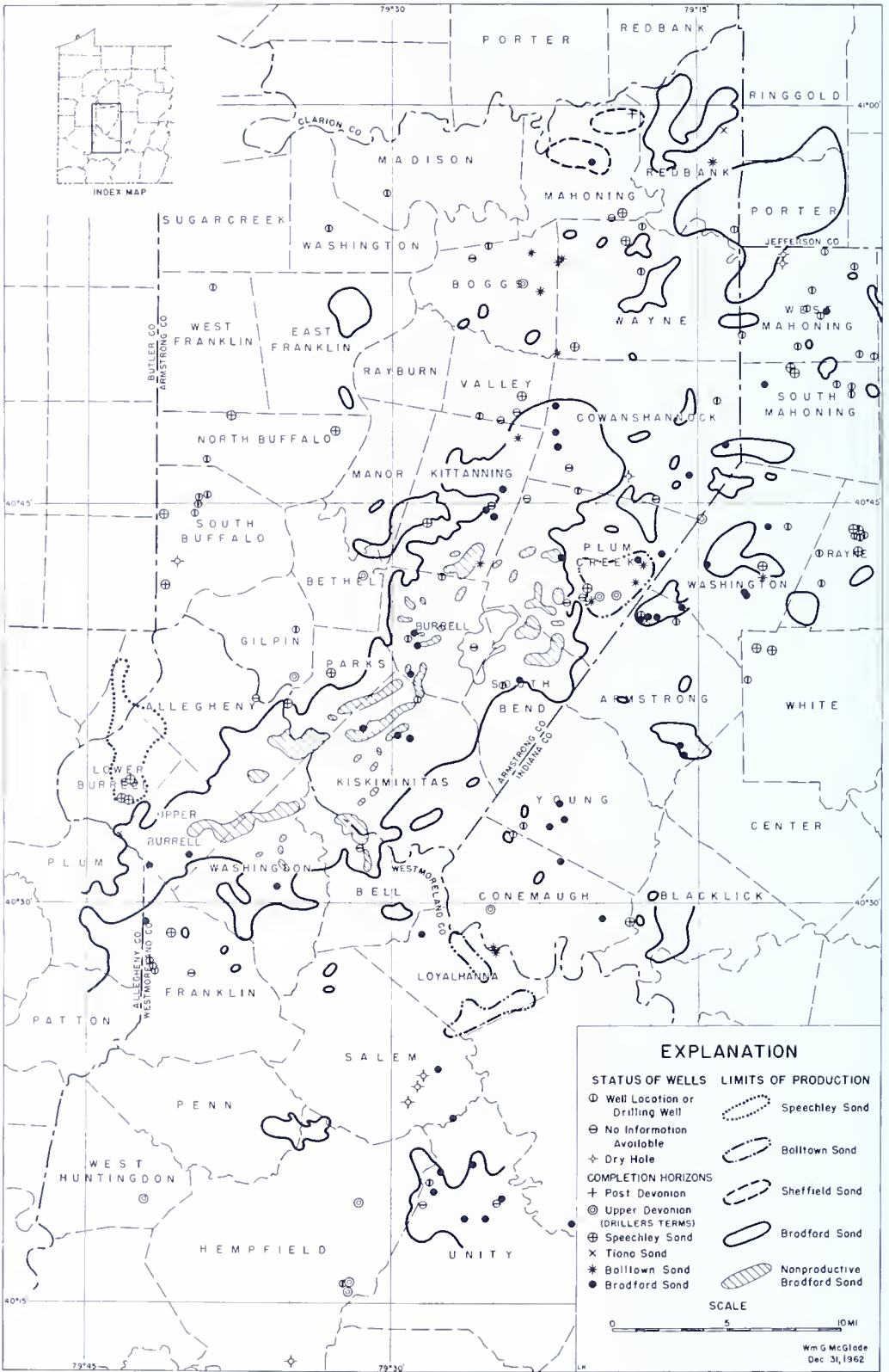


Figure 2. Shallow gas well activity during 1962 in Armstrong and parts of Westmoreland and Indiana Counties, Pa.

These oil wells were drilled in 9 counties of the state; however, the more than 100% increase in oil well completions over 1961 is represented in the 59 new oil wells drilled in Warren County. Initial production rates of the Warren County oil completions averaged 27 BOPD. In Venango County, 20 new oil wells were drilled averaging 2 1/2 BOPD and Elk County followed with 5 wells averaging 2 BOPD.

The enormous increase of exploration activity in Warren County was confined mainly to the Youngsville and Glade areas located near the city of Warren. The producing horizons are the shallow Glade and Clarendon sandstones. The renewal of interest in these two old pays is directly related to their very attractive response to stimulation by hydraulic fracturing. Some wells have reported initial gauges in excess of 100 BOPD and the payout in many cases is rapid. Since the middle of 1962 drilling has been very brisk in the Warren area and it is expected to continue as long as payouts are satisfactory. The Clarendon and Glade sandstones are the only reservoirs in this area that have been adequately tested by fracturing. Undoubtedly other shallow sandstones will be tested in this manner in the near future.

The state's oil production averaged 14,351 BOPD as compared with 15,302 BOPD for 1961. Crude oil prices remained the same for the entire year. Table 5 shows the price of crude oil during the year in the 3 marketing districts in Pennsylvania.

TABLE 5. Price Per Barrel of
Crude Oil, 1962

Date	Northern or Bradford District	Middle or Venango District	Southwestern District
Jan. 1, 1962	\$ 4.63	\$ 4.35	\$ 4.08
Dec. 31, 1962	\$ 4.63	\$ 4.35	\$ 4.08

Statistics for the Bradford Field, which includes the Bradford, Guffy, and Burning Well pools, show that 405 new wells were drilled in 1962 in connection with secondary-recovery oil operations, as compared with 642 wells drilled in 1961, a decrease of about 37%. 106 wells were fractured. The daily average production for the field decreased from 13,267 BOPD in 1961 to 12,216 BOPD in 1962. In the Pennsylvania part of the field (14% is in New York state) 272 wells were completed including 3 wells drilled deeper. 93 wells were fractured. Production amounted to 10,462 BOPD, an amount which represents about 73% of the total production of the state in 1962.

The average daily oil production of the Middle and Southwestern Districts of Pennsylvania was 3,888 bbls. in 1962 as compared with 3,638 bbls. in 1961, an increase of about 7%.

No new shallow oil fields or pools were discovered in Pennsylvania during the year. A shallow Upper Devonian wildcat in Rowe Township, Crawford County, by Quaker State Oil Corp., No. 1 Potter, was abandoned at a total depth of 2090 ft. after finding the shallow sands poorly developed in the area. The nearest production was at Center-ville a few miles to the west (developed during 1880).

DEEP-SAND EXPLORATION AND DEVELOPMENT

Deep-sand exploration in Pennsylvania during 1962 resulted in the discovery of 1 new gas field, 3 new gas pools, and 1 successful deeper pool. Exploration drilling also extended old gas pools and fields. The greatest density of drilling for deep production was in northwestern Pennsylvania in Crawford and Erie Counties where operators continued development of the Medina gas pools. The number of wildcats drilled during the year amounted to 36 which is one less than the number drilled in 1961. The State's producing depth record of 8,574 ft. (in Oriskany) is still held by Felmont's No. 1 Snyder in Somerset County. A new drilling depth record was set this year by Pure Oil Company et al when they completed their Charles Blemle No. 1 (No. 5, Fig. 6, and Table 9) in Allegheny Township, Bradford County. The well was drilled on the Wilmot anticline and bottomed at a total depth of 12,843 ft. in the Tuscarora (Lower Silurian). The well was plugged and abandoned.

The skeletal logs of selected deep wells completed during the year are summarized in Table 8, and the locations of these deep wells are shown on Figure 6. Figure 3 shows the pre-Upper Devonian stratigraphy of the Kardosh No. 1 well, the only well drilled to the Precambrian in Pennsylvania. By the end of 1962 a total of 2,304 deep wells had been drilled in the state. Of the 2,304 deep wells drilled to date, 1,309 were gas wells, 6 were oil and gas wells, 916 were dry holes, 72 were drilled for gas storage, and 1 is to be used as a disposal well for waste "pickle liquor".

There were 95 wells drilled during the year to the Oriskany Formation or deeper, of which 56 were gas wells, 37 had shows or were dry holes, and 2 were drilled for gas storage. Four wells were completed in the Onondaga Chert (Middle Devonian), of which 4 were dry. Three other wells were completed as dry holes above the Onondaga Limestone; two of the 3 wells were drilled in York County in Triassic sediments. Of the 102 deep wells completed during the year, 67 wells were fractured, and 54 of these were completed as gas wells. Before fracturing, the total open-flow capacities of 39 wells, for which fractur-

Pre-Upper Devonian Stratigraphy of KARDOSH No.1 Well

by M. L. Benedum & Arkansas-Louisiana Gas Co.

Summerhill Twp., Crawford Co., Pennsylvania

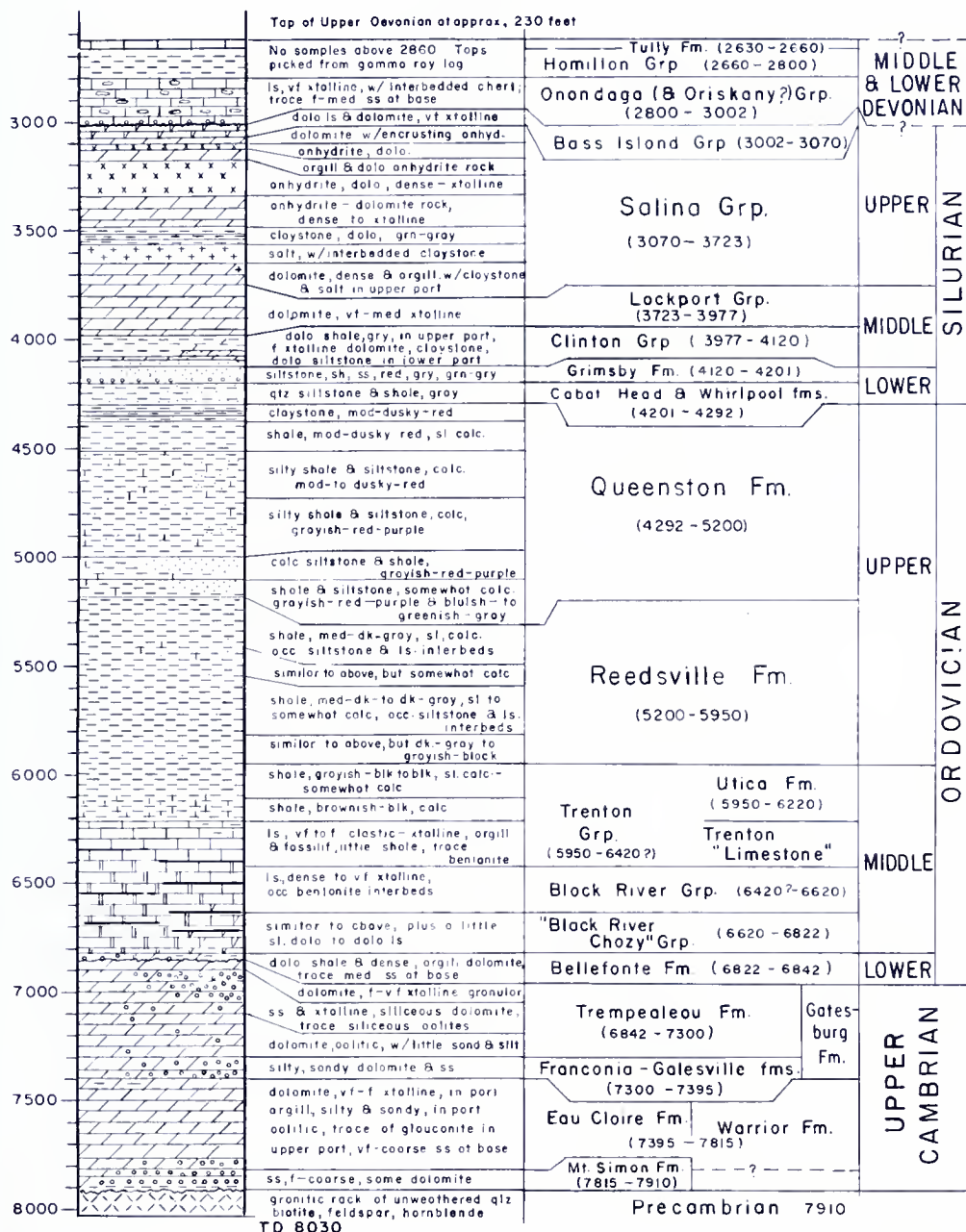


Figure 3.

ing data were obtained amounted to 15,772 MCF of gas per day, compared with 101,115 MCF of gas per day after fracturing. Two gas wells were not fractured, and their total initial open-flow capacities amounted to 11,504 MCF of gas daily. The largest initial open-flow potential was 12,003 MCF of gas daily after fracturing from a Cameron County well, West Virginia Pulp and Paper Company No. 2. Two old wells were reactivated and found additional gas after being drilled deeper. The deep-well total footage amounted to 583,288 ft. including the two reactivated wells. Rotary tools completed 81 deep wells during the year, most of them with air rotary, while 21 were completed with cable tools.

The Whippoorwill Field in Elk and Cameron Counties had the greatest number of completions during the year with 15 gas wells and 3 dry holes. The Indian Spring Pool in Crawford County was next with 14 gas wells. The third most active area was in Erie County where the Bushnell-Lexington Pool had 10 gas wells drilled within its boundaries during 1962.

TABLE 6. Summary Of Deep-Well Completions
Pennsylvania, 1962

	Development		Wildcat		Storage	Total
Gas	52		*4		2	58
Dry		12		32		44
Footage	251,296	85,879	25,861	207,195	12,845	**583,076

*Does not include the Lyle Tarbox in Potter County which was an old well reactivated discovering the Newfield Pool.

**Does not include the two old wells drilled deeper in Somerset County.

The deep well completions for Pennsylvania during 1962 are summarized in Table 6.

Table 7 shows the 1962 gas production from the state's deep gas reservoirs.

DEVELOPMENTS IN THE DEEP GAS FIELDS

Erie County had 17 completions during the year. The Bushnell-Lexington Pool had 10 successful gas completions, two of which were outposts. One of these, the Rena Barker No. 1 (No. 58, Fig. 6, and Table 8) by Paul Britton et al in conneaut Township, extended the Pool to the North along the Pennsylvania-Ohio line. This Medina (Lower Silurian) gas well produced 2240 MCF of gas daily, after fracturing, at a rock pressure of 680 psi in 24 hrs. The second successful outpost is in the

same pool and it extended the production in the Tracy area to the northeast. This outpost is the McCready No. 1 (No. 64, Fig. 6) by Paul Britton. It was drilled in Conneaut Township. The Medina was found at 3136 ft. and produced 750 MCF of gas per day after fracturing. Seven wells in this pool are shut in waiting to be connected to a transportation line. The Lundys Lane Pool had 3 completions, all of them gas wells. The well with the largest initial production during the year in Erie County was drilled in this pool. The well, J. & A. Duda No. 1 by Newmac Oil and Gas Company produced, after fracturing, 6000 MCF of gas per day at a rock pressure of 1005 psi in 18 hrs. The 4 other completions in the county were unsuccessful new-field wildcats. Their locations are shown on Figure 6 by numbers 53, 54, 55, and 69. The records of 53 and 69 are recorded on Table 8. Number 69, the George R. Hoag No. 1 by Texaco, Inc., was completed at a total depth of 4010 ft. in the Queenston (Upper Ordovician) after finding the Oriskany Sandstone (Lower Devonian) absent and a show of gas in the Medina. The other three wildcats were all completed in the Bass Island (Lower Devonian) after finding the Oriskany dry.

Crawford County also with 17 completions had a new pool discovery, a confirmation well, 14 development wells in the Indian Spring Pool including a successful outpost, and one unsuccessful new-field wildcat. The new pool (Kastle Pool) was discovered by Transamerican Petroleum Company's No. 1 George Kastle (No. 47, Fig. 6, and Table 8) in Hayfield Township. The Kastle No. 1 found gas in the Medina at 4198 ft. and bottomed in the Queenston at 4315 ft. After fracturing, the well had an initial open-flow of 1500 MCF of gas per day with a rock pressure of 1060 psi in 10 hrs. An outpost, Mike Novak No. 1 (No. 48, Fig. 6) by the same company confirmed the discovery. The successful outpost in the Indian Spring Pool extended this pool to the northeast. It was drilled by Burnham Gas Company on the Oscar Newland (No. 39, Fig. 6) property. About 150 MCF of gas was found in the Medina from 3778-3833 ft. after fracturing. A 12-hr. rock pressure amounted to 980 psi. A total of 10 gas wells in the pool are shut in waiting to be connected to a transportation line. The unsuccessful new-field wildcat was drilled by the Flannigan Brothers on their Robert Hartenbach lease (No. 32, Fig. 6, and Table 8) in Cussewago Township. The well was abandoned in the Bass Island after finding a small show of oil in the Oriskany at 2926 ft.

Warren County had one successful outpost during the year. Quaker State Oil Refining Company No. 1 (No. 96, Fig. 6, and Table 8) by Biery and Johnson Company was drilled in Limestone Township extending the Camp Run Field. The well bottomed in the Queenston after finding a small amount of gas when fracturing the Medina. The total depth was 6009 ft.

Two unsuccessful deeper pool tests were completed in McKean County. The Minard Run No. 1 (No. 78, Fig. 6, and Table 8) Lot 38 by Minard Run Oil Company was drilled in the Bradford Field in Bradford Township. The well started in the Pennsylvanian and ended in the Potsdam (Upper Cambrian?) at a total depth of 11,891 ft. A show of gas was encountered at 10,000 ft. in the Upper Cambrian. In 30 days the rotary tools had drilled with air, from the surface to a depth of 10,263 ft. through consolidated rock. A total of 9,563 ft. of open hole was drilled on air. Before completion 11,121 ft. of open hole was drilled. Casing was set at 10,300 ft. Six attempts were made to acid-frac the well; the well, in early 1963, had not been plugged, but is considered as "shut in." The other wildcat was drilled by Kendall Refining Company on their Freeman lease (No. 77, Fig. 6). After finding a small show of gas and saltwater in the Oriskany the well reached a total depth of 4297 ft. in the Bass Island. It was then plugged back to the Bradford Sand (Upper Devonian) and used in the company's secondary-recovery project.

Potter County with 11 completions had a new discovery, 5 development gas wells, 1 dry hole, 1 unsuccessful outpost, 1 gas storage well, and 2 unsuccessful new-field wildcats. The new discovery was made by a reactivated well, the Lyle Tarbox No. 1 (No. 88, Fig. 6, and Table 8) by Fairman Drilling Company in Ulysses Township. The old hole was opened and the Oriskany Sandstone was fractured. The well produced 180 MCF of gas per day at a 7-day rock pressure of 2135 psi, discovering the Newfield Pool. At the close of the year 5 additional gas wells and one dry hole had been drilled in the pool. New York State Natural Gas Corp. and Fairman Drilling Company drilled an unsuccessful outpost to the Ulysses Field when their Charles Wallis No. 1 (No. 89, Fig. 6) found only a show of gas in the Oriskany. A gas storage well (No. 90, Fig. 6) was completed in the Leidy Storage Field by New York State Natural Gas Corp. Fairman Drilling Company drilled an unsuccessful new-field wildcat called Somogyi No. 1 (No. 81, Fig. 6) and located in Bingham Township. The well was drilled on the Harrison anticline between the newly discovered Newfield Pool to the south and the Harrison Gas Storage Field to the north. After finding the Oriskany dry at 5496 to 5525 ft. the well was plugged and abandoned. The second unsuccessful new-field wildcat in the county during the year was the North Penn Gas Company No. 1 (No. 80, Fig. 6, and Table 8) by Felmont Oil Corp. in Sylvania Township. The well was drilled on the southeast flank of the Sabinsville anticline in an effort to find Oriskany gas along the trend established by the Boone Mt. Pool and the Whippoorwill Field to the southwest. After fracturing, a small show of gas and saltwater was observed coming from the Oriskany; the well was plugged and abandoned. This well was about a 22-mile stepout on trend from the Whippoorwill Field.

Tioga County had two unsuccessful new-field wildcats. The Northwest Mining Company No. 1 (No. 94, Fig. 6, and Table 8) by Harry Brant was drilled in Duncan Township in the Blossburg syncline. At 7310 ft. the Oriskany was found to be 50 ft. thick, but dry, and the well was plugged and abandoned. The second wildcat was the F. Rachel No. 1 (No. 95, Fig. 6) by Ryan Oil Company in Westfield Township northwest of the Sabinsville Storage Pool on a geophysical prospect. The well was plugged and abandoned after finding 10 ft. of dry Oriskany at 5166-5176 ft.

Bradford County's lone unsuccessful new-field wildcat established a new depth record in the State. The well was drilled by Pure Oil Company on the Charles Blemle lease (No. 5, Fig. 6, and Table 8) in Wilmot Township on the Wilmot anticline. The Oriskany was found at 8034 ft. and the Tuscarora at 12,470 ft. After establishing a new depth record of 12,843 ft. the well was plugged and abandoned, still in the Tuscarora.

In Elk County 4 development wells were drilled in the Whippoorwill Field. Three of the wells were gas wells and the fourth was a dry hole (No. 52, Fig. 6) which limits the field to the southwest.

Cameron County with 16 completions had 13 development wells drilled in the Whippoorwill Field, an unsuccessful outpost drilled in the same field, a dry hole in the Benezette-Driftwood Pool, and an unsuccessful new-field wildcat. Of the 13 development wells in the Whippoorwill Field 12 were gas wells and one was a dry hole (No. 14, Fig. 6) limiting the field to the northwest. The unsuccessful outpost of the Whippoorwill Field was drilled by the New York State Natural Gas Corp. on the Pa. Tract 100 lease (No. 21, Fig. 6) in Shippen Township on the southeast flank of the Sabinsville anticline. The well was drilled about 3 miles northeast of the field and on trend, but saltwater was found along with a small amount of gas in the Oriskany and the well was plugged and abandoned. Fairman Drilling Company drilled the New Bethlehem Rod and Gun Club No. 1 well (No. 20, Fig. 6) in Gibson Township on the north edge of the Benezette-Driftwood Pool. A small show of gas and saltwater was found in the Oriskany and the well was plugged and abandoned. The wildcat was drilled by Felmont Oil Corp. on Pa. Tract 103 (No. 22, Fig. 6) in an attempt to find Oriskany production on the southeast flank of the Sabinsville anticline on trend with the Whippoorwill Field. The wildcat was located about 9 miles northeast of the field. After finding saltwater in the Oriskany, the well was plugged and abandoned.

Clinton County had one deep well drilled within its borders and that was a gas storage well drilled by New York State Natural Gas Corp. in the Leidy Field.

Two unsuccessful new-field wildcats were drilled in Lycoming County. The Pa. Tract 101 No. 1 (No. 75, Fig. 6 and Table 8) well by New York State Natural Gas Corp. in Brown Township on the Slate Run anticline found the Oriskany dry at 7832-7869 ft. and the well was plugged and abandoned. The second wildcat was J. F. Stryken No. 1 (No. 76, Fig. 6, and Table 8) by Felmont Oil Corp. in Cogan House Township on the Cogan House anticline. After fracturing the Oriskany, a show of gas and saltwater was observed and the well was plugged and abandoned at a total depth of 7227 ft.

Clearfield County had 7 completions including 4 unsuccessful new-field wildcats, 1 successful outpost, and 2 dry development wells. Manufacturers Light and Heat Company drilled 3 wildcats in Boggs Township (Nos. 28, 29, 30, Fig. 6) on the Laurel Hill anticline. All three wells had shows of gas and saltwater and were plugged and abandoned. The fourth wildcat was drilled by New York State Natural Gas Corp. on the G. R. Rorabaugh property (No. 24, Fig. 6, and Table 8) on the northern end of the Nolo anticline. The well produced gas and saltwater after fracturing the Oriskany. It was plugged and abandoned at a total depth of 8192 ft. A successful outpost (No. 25, Fig. 6, and Table 8) at the southern end of the Rockton Pool was drilled by New York State Natural Gas Corp. The 2 dry development wells (Nos. 26, 27, Fig. 6) were drilled in the Buboia Pool.

Northumberland County's unsuccessful new-field wildcat was drilled by E. T. Matthews on the Hillbish (No. 79, Fig. 6, and Table 8) in Point Township. The well commenced in the Middle Devonian and was completed as a dry hole in the Bloomsburg at a total depth of 5804 ft.

Carbon County had one unsuccessful new-field wildcat which was drilled on the Harry Smith by Pure Oil Company in Towamensing Township. No information has been released on the well but it is thought that the well finished in the Onondaga (Middle Devonian) at a total depth of 3211 ft. and was plugged and abandoned.

Indiana County had 4 unsuccessful wildcats drilled within its borders. All 4 of the wells (Nos. 71, 72, 73, 74, Fig. 6) were finished in the Helderberg (Lower Devonian) after finding small shows of gas and saltwater in the Oriskany. The records of wells No. 71 and 73 are recorded on Table 8. Well No. 71 was drilled on the Nolo anticline, Nos. 72 and 73 on the Chestnut Ridge anticline and No. 74 on the Richmond anticline.

The J. & H. Leiden Hrs. No. 1 (No. 6, Fig. 6) by Peoples Natural Gas Company in Cambria County, Chest Township was an un-

successful new-field wildcat drilled on the Laurel Hill anticline. After finding the Oriskany dry the well was plugged and abandoned at a total depth of 8230 ft.

In Blair County the Rankey No. 1 (No. 4, Fig. 6, and Table 8) by Hollidaysburg Oil and Gas Company was drilled in Allegheny Township on the Sinking Valley anticline. The well started in the Clinton (Middle Silurian), found the Juniata at 1321 ft., and penetrated a fault at 2405 ft. Below the fault the well penetrated the Tonoloway (Upper Silurian) and finished at 5010 ft. in the Clinton.

Westmoreland County had 2 discoveries, 1 unsuccessful new-pool wildcat, and 2 unsuccessful outposts. The C. E. Hribal No. 1 (No. 97, Fig. 6, and Table 8) well by Felmont Oil Corp. in Mt. Pleasant Township discovered the Hribal Pool. The well is located on the southwest flank of the Chestnut Ridge anticline about 2 miles west of the St. Boniface Chapel Pool. After fracturing the Onondaga Chert-Oriskany Sandstone interval the well produced 3000 MCF of gas per day at a 41 hr. rock pressure of 3340 psi. The second discovery was made on the Fayette anticline in Derry Township by the Peoples Natural Gas Company well J. Kahl No. 1 (No. 99, Fig. 6, and Table 8), discovering the Kahl Pool in the Blairsville Field. The well produced, after fracturing, 9500 MCF of gas per day from the Oriskany at a 48 hr. rock pressure of 4372 psi. A wildcat was drilled by Peoples Natural Gas Company on their E. Lentz (No. 98, Fig. 6) lease in Unity Township. The well was finished in the Onondaga Chert which had a show of gas and saltwater. At a total depth of 7482 ft. the well was plugged and abandoned. Two unsuccessful outposts were completed (Nos. 100, 101, Fig. 6). One was an outpost of the McCance Pool and the other the Beck Pool. The former was an Oriskany test and the latter tested the Onondaga.

An unsuccessful new-field wildcat was drilled in Fayette County on the Chestnut Ridge anticline. The well, Daniel Harper No. 1 (No. 70, Fig. 6, and Table 8) by Peoples Natural Gas Company et al, was plugged and abandoned when saltwater was found in the Onondaga Chert-Oriskany Sandstone section after fracturing.

Somerset County had 3 dry holes drilled within its boundaries and two old wells were reactivated. One of the dry holes was an unsuccessful deeper pool wildcat drilled by Felmont Oil Corp. et al on the R. Henninger (No. 93, Fig. 6, and Table 8) in Quemahoning Township east of the Boswell dome. The well was plugged back and produced from a shallow Upper Devonian sand after finding a show of gas and saltwater in the Oriskany. An unsuccessful outpost in the Williams Pool was drilled by Peoples Natural Gas Company et al on the V. Beaver (No. 91, Fig. 6) in Jenner Township on the Laurel Hill anticline. Faulting

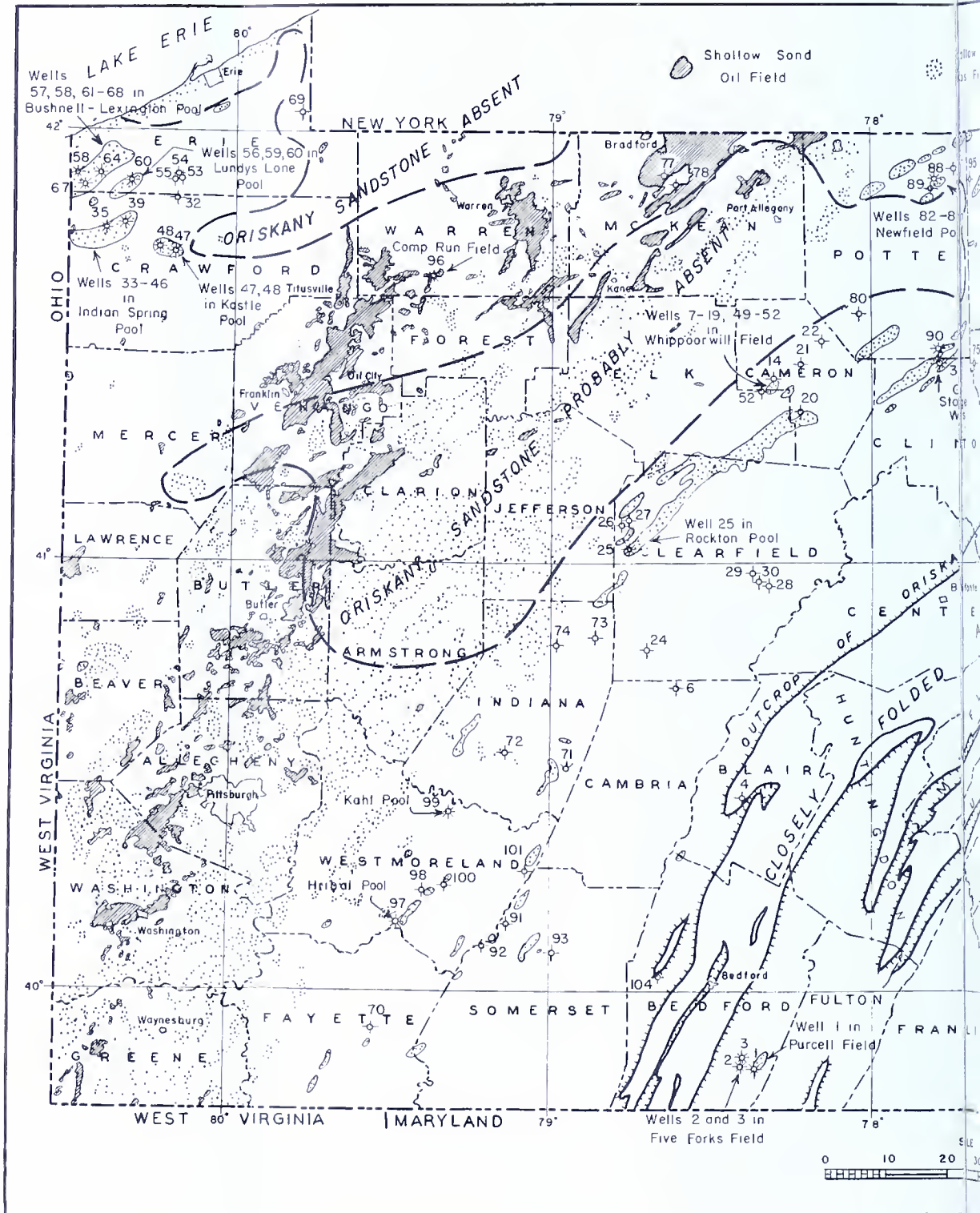
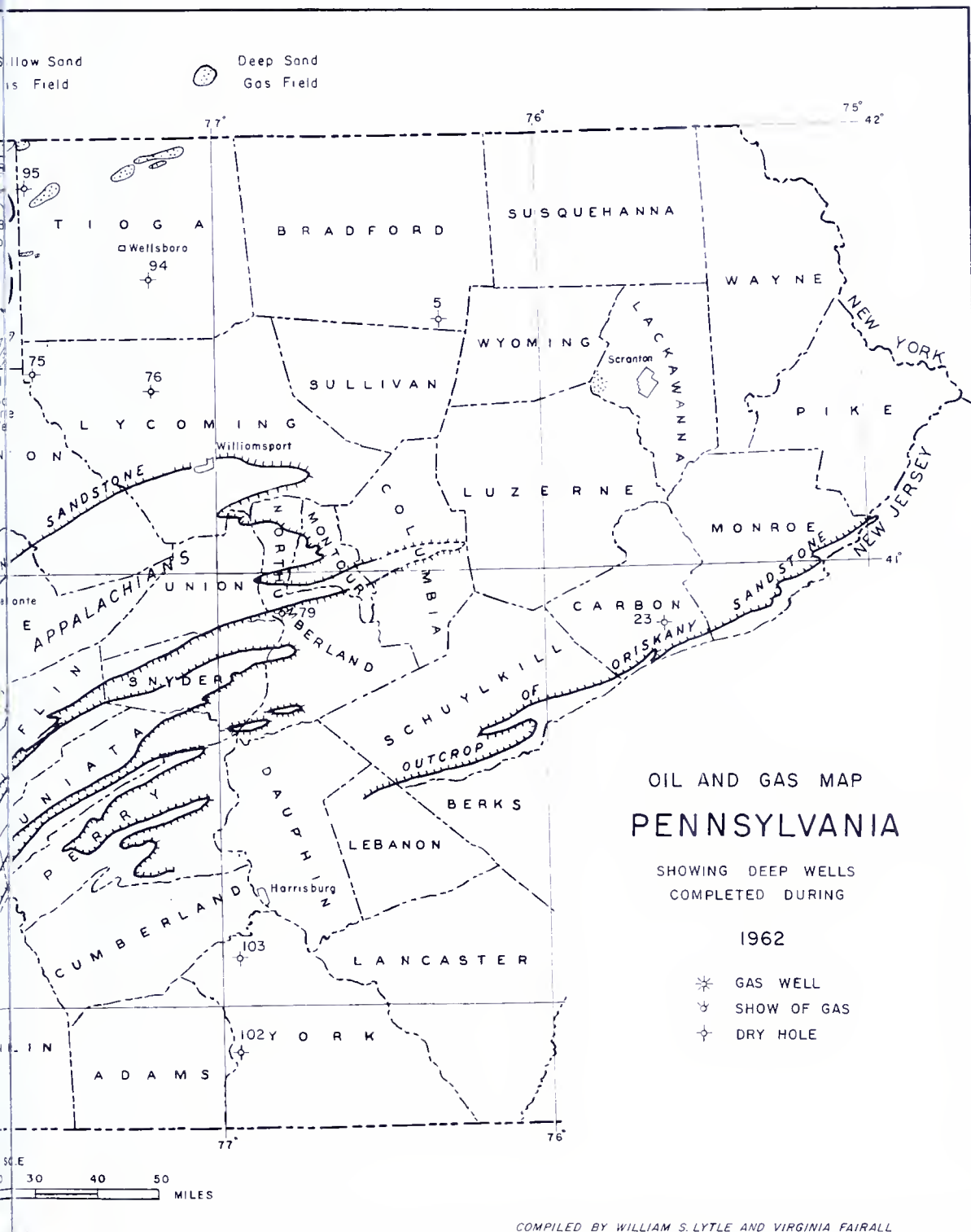


Fig. 6.



was encountered in the Hamilton (Middle Devonian) and the well was plugged and abandoned at a total depth of 8800 ft. while still in the Hamilton. A dry hole (No. 92, Fig. 6) was drilled at the south end of the Clark Pool limiting the pool to the southwest. A Boswell Field producer was reactivated, drilled the bottom of the Onondaga Chert and through the Oriskany Sandstone, producing 1750 MCF of gas after fracturing at a 2-day rock pressure of 3000 psi. This well was the C. W. Friedline by Felmont Oil Corp. The same company also deepened their Royal Rhoads No. 1 in the same field. Before deepening the open flow was 1026 MCF per day and 2302 MCF per day after deepening. The two wells were deepened 129 ft. and 83 ft. respectively.

Bedford County had the only new-field discovery during the year. In addition to the discovery well, 2 development wells were completed. In a closely folded area of the Valley and Ridge Province, New York State Natural Gas Company drilled their William Davis Estate No. 1 (No. 2, Fig. 6, Table 8) in Monroe Township discovering the Five Forks Field. The well found the Oriskany at 5697 ft. The natural initial production at a 106 hr. rock pressure of 2078 psi was 10,504 MCF of gas per day. This company drilled a confirmation well, Paul Snyder No. 1 (No. 3, Fig. 6) before the year's end, extending the field to the northeast. The Snyder well had an initial open flow of 4875 MCF of gas per day at a 46 hr. rock pressure of 1913 psi after fracturing. The Purcell Field to the east had a development gas well (No. 1, Fig. 6) drilled by the same company.

York County had two unsuccessful new-field wildcats. Although these wells were drilled in young sediments they are included in the deep well listing since they created considerable interest. Well No. 102, Fig. 6 was drilled by Donelson Company on the Kickes property in Paradise Township to a total depth of 1800 ft. The penetrated sediments were all Triassic. Miller No. 1 well (No. 103, Fig. 6, and Table 8) was drilled by Miller et al in Monogahan Township. The first 930 ft. was drilled through Triassic Diabase. From a depth of 930 ft. to a total depth of 3509 ft. the sediments were all Triassic.

Purcell Field

The Purcell Field was, until 1962, the only gas field located in the Valley and Ridge Province in Pennsylvania, and as such it is deserving of special attention. The Valley and Ridge Province is characterized by tight folds and complex faulting and drilling therein is fraught with structural hazards. But it is likely that in 1963 (and afterwards) there will be an increase in exploration activity in the Valley and Ridge Province; for this reason the Purcell Field was selected for special mention in this review.

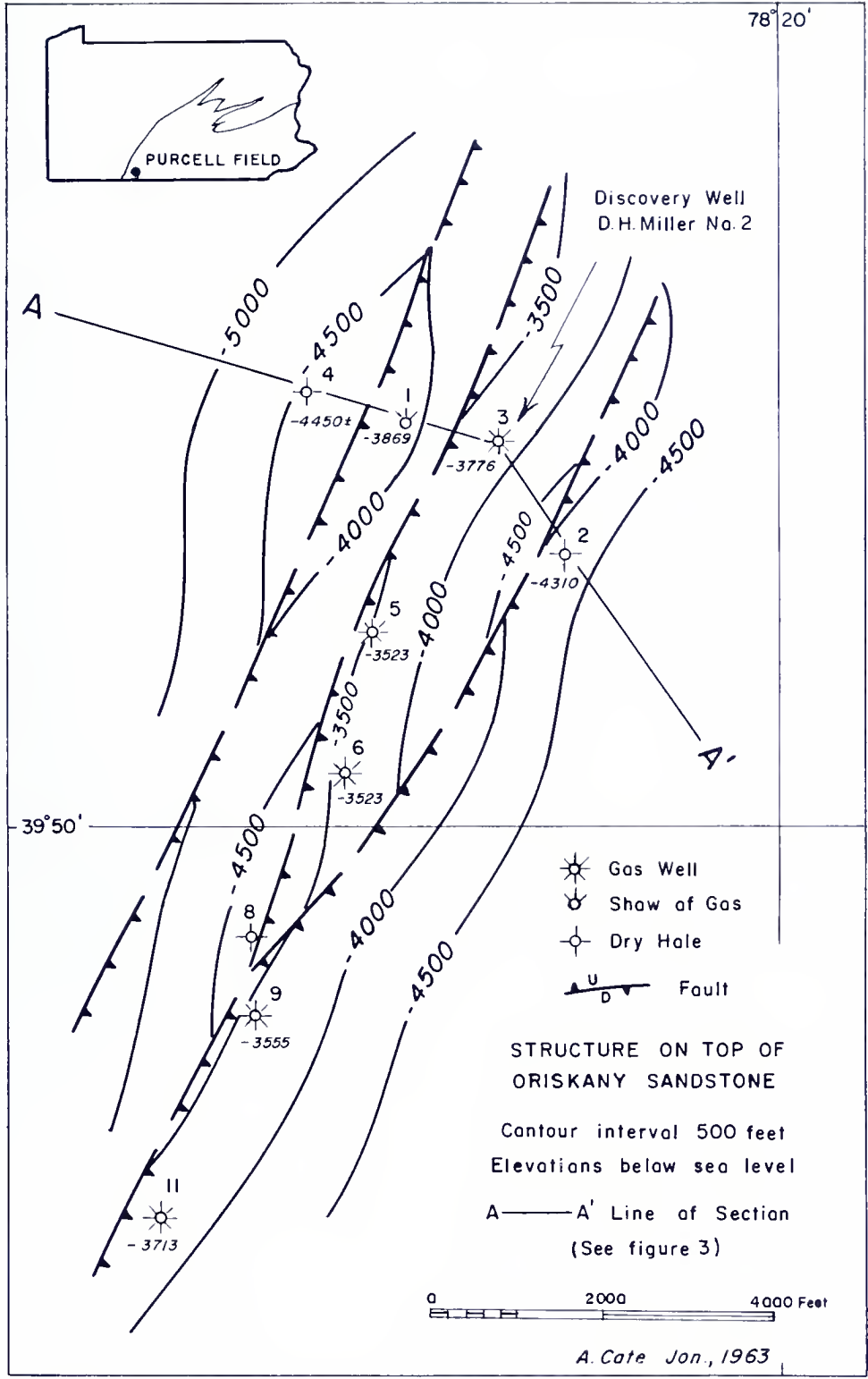


Figure 4. Structure contour map of the Purcell Field, Bedford County, Pennsylvania.

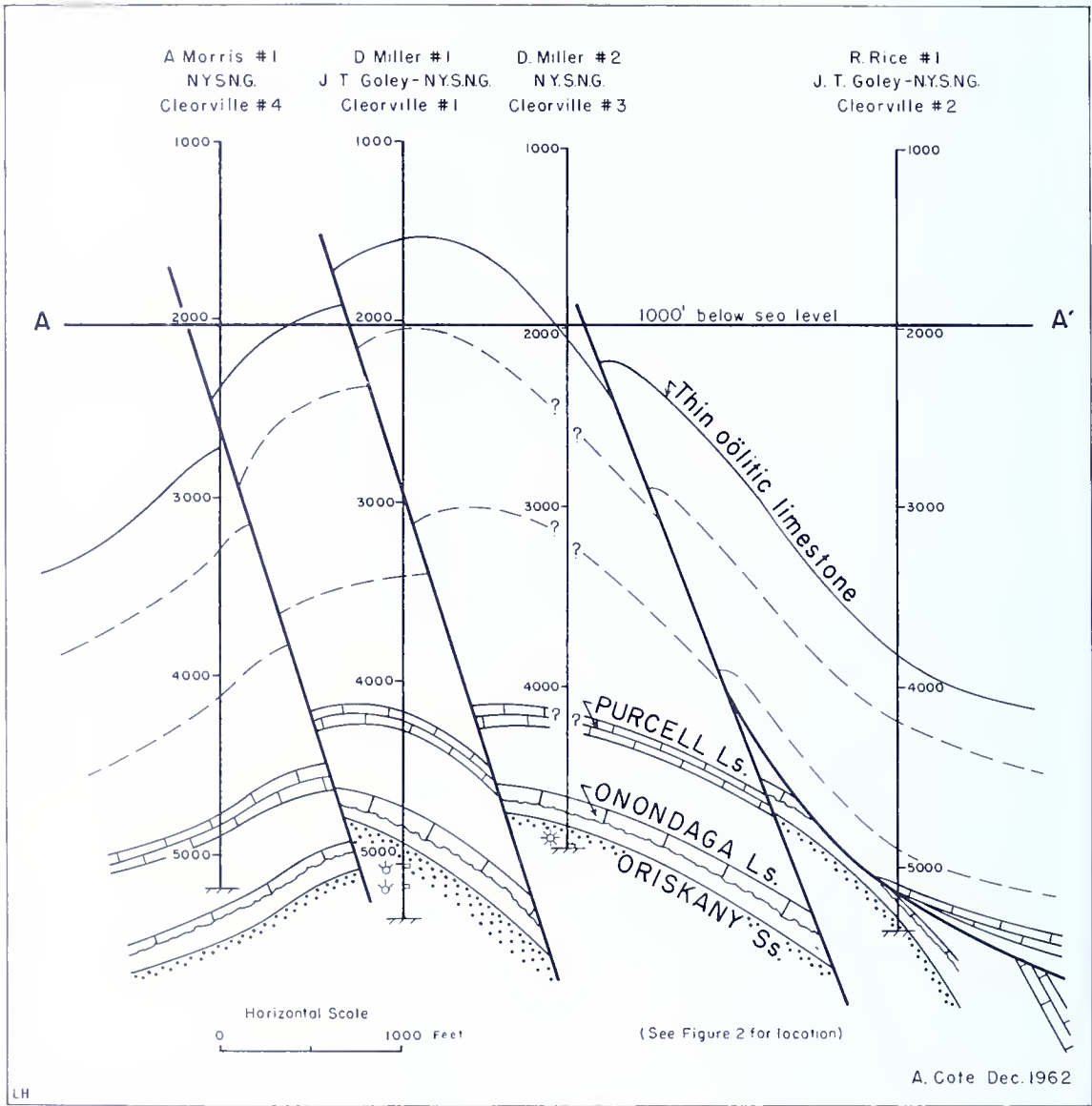


Figure 5. Cross section in the Purcell Field, Bedford County, Pennsylvania.

The Purcell Field is in the Clearville quadrangle in southeastern Bedford County. The regional structural setting of the field is within the Valley and Ridge Province in an infold of relatively young rocks called the Broad Top synclinorium. Within this synclinorium are to be found a number of sharp folds which die out and replace each other longitudinally quite quickly. It is on one such anticlinal fold that the Purcell Field is located (See Fig. 4). Surface structures barely suggest the complexities of the subsurface. The rocks exposed at the surface are marine shales and siltstones of Late Devonian age.

The discovery well, D. Miller #2, was drilled by New York State Natural Gas Corp. and completed in December 1957 as a gas producer from the Oriskany sandstone. Two unsuccessful tests in 1954 and 1956 (by John Galey and N. Y. State Nat. Gas Corp.) had been abandoned prior to the drilling of the discovery well, and one more dry hole was to be drilled next after the completion of the Miller #2, so that at the outset the profitability of further exploration in the area was not assured. Since the drilling of the first four wells, however, the success ratio in the area has improved considerably, for the operator (N. Y. S. N. G. is the only company active in the area) has learned a good deal about the structural details of the subsurface. The beds are steeply inclined; reverse faulting is common in the subsurface; accurate measurement of interval thicknesses is complicated by flowage in the sharp folds as well as by local unconformities in the Middle Devonian section; control of deviation from the vertical during drilling is important--all of these are significant problems (See Fig. 5).

Two stratigraphic markers which are used informally in the environs of the Purcell Field are the "Chaneyville sandstone" and a thin "oolitic limestone" approximately 160 feet below; the oolitic limestone is an approximate stratigraphic correlative of the Tully limestone to the north. More than 1000 feet below the oolitic limestone is the "Purcell limestone" which is a calcareous unit within the Marcellus shale section of the Hamilton Group; it is not known to exist to the west, though it may be traced some distance to the east. The section below the Purcell limestone and above the Onondaga limestone is quite variable in thickness. The Onondaga and the Oriskany are generally as described in nearby outcrops and in well sections to the west.

At this time there are five gas wells in the field. Four dry holes have been drilled in the course of development so far. The producers were tied into a pipeline in the summer of 1962. A few average figures for the field may be of interest:

Average depth to Oriskany: 4640 feet

Average initial potential (natural): 400 Mcf

Average initial potential (after fracture): 1050 Mcf
Virgin "rock" pressure: 1920 psi.
Productive acreage: 400 acres

During 1962 a new but quite similar accumulation in the Oriskany, the Five Forks Field, was discovered 3 miles to the west of the Purcell Field. Two gas wells have been completed in the new field and, along with the Purcell Field, development is currently being carried out.

ADDITIONS AND CORRECTIONS

Prior to the publication of Table 8 in this report the log of well No. 104 had never been published by the Survey. This well was drilled about 1930 on the Hillegas property by South Penn Oil Co. in Napier Twp. Bedford Co. The formation tops, shown on Table 8 are from a gamma ray log run by the same company in 1950. The location of the well is shown on Figure 6. In the survey publication, Bulletin M 45, the longitude location of the Emma McKnight No. 1 well by Melben Oil Co., Pymatuning Twp., Mercer Co. is incorrect. The correct longitude location is 12,400 ft. west of 80°25'.

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TABLE NO. 7 Deep Gas Production in Pennsylvania, 1962

County	Field	Pool	Discovery Date	Production in MCF		Status of Field or Pool At End of 1962
				Cumulative Production at End of 1962	Production 1962	
Armstrong	Shellhammer	Rupert	11/14/58	261,607	30,639	Producing
Bedford	Purcell Five Forks		12/14/57 6/21/62	Turned into line 1962 Turned into line 1962		Producing Producing
Bedford & Blair	Pavia		11/20/61			Shut in
Cameron & Elk	Whippoorwill		7/10/61	500,000	4,750,000	Producing
Cameron, Elk, Jefferson, Clearfield & Indiana	Punxsutawney Driftwood		9/15/51	405,300,000	15,600,000	Producing
	Benezette		1/5/53			
	Driftwood		9/15/51	226,000,000	2,700,000	Producing
	Boone Mt		9/18/58			
	DuBois		1/6/60	75,500,000	7,500,000	Producing
	Helvetia		5/11/60			
	Reed -		5/9/55			
	Deemer		12/1/53	101,000,000	5,200,000	Producing
	Rockton		2/25/55			
	Sykesville		11/10/60			
	Hicks Run		6/7/56	2,800,000	200,000	Producing
Clinton & Potter	Leidy		1/9/50	157,452,832	900,000	Gas Storage & Producing
	Greenlick		1/25/55	49,400,000		Gas Storage 1961
	Ole Bull		1/9/59	2,652,800	900,000	Producing
Crawford & Erie	Conneaut		2/11/57	740,070	11,147,575	Producing
	Bushnell -		12/31/58	170,100	206,625	Producing (7 wells shut in)
	Lexington					
	Indian Spring		9/11/57	569,970	850,000	Producing (10 wells shut in)
	Kastle		7/14/62			Shut in
	Lundys Lane		11/9/61		90,950	Producing
Erie	Burgess		10/17/60			
	Corry		4/29/47	26,844	31,326	Producing
			5/20/53	960,322	7,030	Producing & Gas Storage
	Beaver Dam		7/17/56	106,622	7,030	Producing
				5,000		Shut in
	Phillipsville					

		10/13/61	39,205,818	312,798	39,545,921	Shut in
Spruell Summit	East Summit	3/24/38	21,442	4,612	26,054	Producing
	North Summit	12/31/60	20,003,360	111,109	20,114,469	Producing
	South Summit	3/24/38	19,208,321	197,077	19,405,398	Producing
		5/9/42				
Indiana	Jacksonville	9/21/56	16,587,000	885,000	17,472,000	Producing
	Nolo	9/30/56	5,400,000	350,000	5,750,000	Producing
Potter	Ellisburg	9/1/33	78,100,000	1,400,000	79,500,000	Producing
	Bingham Center	1/2/39				
	Ellisburg	9/1/33	78,100,000	1,400,000	79,500,000	Producing
	West Bingham	7/16/36				
	Ulysses	10/2/39	1,420,460	150,000	1,570,460	Producing
	Newfield	4/2/62		1962 Discovery		
Somerset	Boswell	11/11/58	4,111,244	1,188,180	5,299,424	Producing
	Snyder	11/11/58	3,928,866	1,015,298	4,944,164	Producing
		6/16/60	182,378	172,882	355,260	Producing
Warren	Camp Run	5/21/61				Producing
Washington	Daniels Run					
Westmoreland	Blairsville					
	Dry Ridge	9/6/61	1,367	11,103	12,470	Producing
	Jacobs Creek					
	Lycippus	10/23/62				
		8/25/46	360,000	88,271	88,271	Producing
	Bailey	12/26/61				Producing
	Derry	8/17/43	4,421,812	245,327	4,667,139	Producing
	Piper	12/5/58	42,905	20,463	63,368	Producing
	St. Boniface	8/17/43	627,873	11,267	639,140	Producing
	Chapel	9/13/56	3,751,034	213,597	3,964,631	Producing
	Hribal	8/17/62		16,158	16,158	Producing
Westmoreland & Somerset	Johnsontown	5/16/57	8,138,936	2,581,487	10,721,423	Producing
	Baldwin	5/22/60	2,348,390	1,136,825	3,485,215	Producing
	Beck	5/16/57				
	Williams	2/14/58	5,791,546	1,444,662	7,236,208	Producing
		12/5/58	3,035,487	598,812	3,634,299	Producing
	Blair	12/5/58	2,629,926	459,716	3,089,642	Producing
	Clarke	3/15/61	174,485	99,185	273,670	Producing
	Kooser	5/19/53	231,076	39,911	270,987	Producing

TABLE 8 SUMMARIZED RECORDS OF DEEP WELLS DRILLED IN PENNSYLVANIA IN 1962
ELEVATIONS AND DEPTHS ARE IN FEET

Sheet 1

COUNTY	Bedford	Bedford	Bedford	Blair	Bradford	Cambria	Cameron	Cameron	Cameron
MAP NUMBER	1	2	3	4	5	6	7	8	9
NAME OF WELL	Herbert P. Akers 3	Wm C. Davis Estate, 1	Paul Snyder 1	Hankey 1	Charles Blenle 1	J & H Leiden Heira 1	Cameron Co. Commissioners 1	Fletcher Cole- man Heira 2	Fletcher Cole- man Heira 3
OPERATOR	WYNG. Corp. N-846	WYNG. Corp. N-845	WYNG. Corp. N-863	Holidaysburg Oil & Gas Co.	Pure Oil Co.	The Peoples Nat Gas Co. No. 4361	Felmont Oil Corp P-155	Lee E. Winter	WYNG Corp. api
TOWNSHIP	Monroe	Monroe	Monroe	Allegheny	Wilnot	Cheat	Shippen	Shippen	Shippen
QUADRANGLE	Clearville 11	Clearville 10	Clearville 12	Holidaysburg 2	Monroeton 2	Patton 1	Benezette 293	Benezette 291	Benezette 294
LATITUDE	4550 ft. S 39°30'	850 ft. B 39°50'	1300 ft. N. 39°50'	18,000 ft. S 40°30'	740 ft. S. 41°35'	15,200 ft. S. 40°45'	3400 ft. N. 41°25'	1300 ft. N. 41°25'	5300 ft. N. 41°25'
LONGITUDE	7250 ft. W. 78°20'	1900 ft. E. 78°25'	3000 ft. E. 78°25'	3000 ft. E. 78°25'	7700 ft. E. 76°20'	9750 ft. W. 78°35'	7100 ft. E. 78°20'	7900 ft. E. 78°20'	10,650 ft. W. 78°15'
DATE COMPLETED	9-6-62	6-21-62	12-7-62	10-10-62	6-16-62	8-1-62	10-3-62	1-27-62	9-11-62
ELEVATION*	1020 DF	1561 DF	1616 DF	1060 G	1576 KB	1913 KB	1762 DF	1538 G	1654 DF
TULLY	Purcell, 4030 Fault at 4400	Purcell, 5387-5432	Purcell, 5530		5855-5970	7208 Hamilton 7241	6124	6050-6140	6065 - 6125
DNONDAGA	4607	5593	5754		7678	8040 8060	6727 6740	6648 6659	6665 6679
ORISKANY	4733	5697	5856		8034	8124	6762	6691 Gas at 6691	6709 Gas at 6710
HELDERBERG	4948		6025			8145	6783		6720
SALINA					8750 Wills Creek 10,207				
GUELPH-LOCKPORT					Bloomaburg 10,949 McKenzie 11,473 Rock-Keferil, 583				
MEDINA					Ceastance, 785 Tuscarora, 422	Rose Hill 11,708 Tuscarora, 12,470			
QUEENSTON				Juniata 1321					
TOTAL DEPTH	4980	5738	6046	5010	12,843	8230	6784	6706	6735
DEEPEST FORMATION REACHED	Helderberg	Oriskany	Helderberg	Clinton	Tuscarora	Helderberg	Helderberg	Oriskany	Helderberg
RESULT	Cheneyville 2167 Oolitic 2319 605 Mcf. Gas in 106 hrs. RP1760 psi in 60 days	10 50W Mcf. Gas at 2405 Fault at 2405 Monoway 2405 Oolitic 4230 Wills Creek 4280 Clinton, 4207	Dry	Dry	Dry	Dry	8500 Mcf. Gas A.F. RP 2640 psi in 5 days	9100 Mcf. Gas A.F. RP 3606 psi in 21 hrs.	6000 Mcf. Gas A.F. RP 3460 psi in 48 hrs.

*ELEVATIONS: DF - Derrick Floor

G - Ground

KB - Kelly Bushing

RT - Rotary Table

TC - Top of Cellar

SUMMARIZED RECORDS OF DEEP WELLS (continued)

COUNTY	Cameron	Cameron	Cameron	Cameron	Cameron	Cameron	Cameron	Cameron	Cameron	Cameron	Cameron	Cameron
MAP NUMBER	11	12	13	14	15	16	17	18	19	20		
NAME OF WELL	A. Pardee Est. 10	Pa. Tract. 14A 1	Pa. Tract. 14A 2	Pa. Tract. 14A 3	Lee Skillman 1	WVa. Pulp & Paper Co., 1	WVa. Pulp & Paper Co., 1	WVa. Pulp & Paper Co., 2	WVa. Pulp & Paper Co., 3	New Bethlehem Rock Gun Club, 1		
OPERATOR	NYSGA Corp. N-589	Phillips Petro- leum Co.	Phillips Petro- leum Co.	Phillips Petro- leum Co.	NYSGA Corp. N-538	Filmont Oil Corp. F-157	The Sylva Corp.	The Sylva Corp.	The Sylva Corp.	Falman Drilling Co.		
TOWNSHIP	Shippen	Shippen	Shippen	Shippen	Shippen	Shippen	Shippen	Shippen	Shippen	Shippen		
QUADRANGLE	Benezette 295	Benezette 281	Benezette 289	Benezette 296	Benezette 284	Benezette 297	Benezette 286	Benezette 288	Benezette 290	Driftwood 108		
LATITUDE	1100 ft. N 41°25'	2900 ft. N. 41°25'	2700 ft. N. 41°25'	4800 ft. N. 41°25'	250 ft. S. 41°25'	2850 ft. N. 41°25'	1850 ft. S. 41°25'	3500 ft. S. 41°25'	1800 ft. S. 41°25'	9600 ft. N. 41°20'		
LONGITUDE	10,650 ft. W 78°15'	11,150 ft. W. 78°15'	8200 ft. E. 78°20'	7400 ft. E. 78°20'	6600 ft. E. 78°20'	5700 ft. E. 78°20'	4400 ft. E. 78°20'	6200 ft. E. 78°20'	7800 ft. E. 78°20'	6300 ft. E. 78°15'		
DATE COMPLETED	11-28-62	1-22-62	7-28-62	11-22-62	3-16-62	11-28-62	5-8-62	7-5-62	8-13-62	10-29-62		
ELEVATION	1387 DF	1532 KB	1660 DF	1815 KB	1529 DF	1402 DF	1647 DF	1612 KB	1282 DF	970 DF		
TULLY	5963	6040 - 6130	6077 - 6163	6150 - 6258	6005	5752 - 5852	6080 - 6173	6164 - 6255	5811 - 5906	5405		
ONONDAGA	Limestone Chert	6642 6652	6684 6697	7116 7122 Fault	6609 6624	6378 6395	6689 6702	6773 6791	6431 6449	6095		
ORISKANY	6607	6682	6721	6721	6655	6424	6734	6817	6475	6128		
HELOERBERG	Gas at 6610-14		Gas at 6721		Gas at 6657-67		Gas at 6738	Gas at 6820				
BASS ISLAND	6640	6705			6680	6441	6750	6843				
SALINA												
GUELPH-LOCKPORT												
CLINTON												
IRONDEQUOIT												
RED MEONA (GRIMSBY)												
WHITE MEONA (WHIRLPOOL)												
QUEENSTON												
TOTAL DEPTH	6641	6707	6737	7285	6681	6444	6753	6849	6500	6154		
DEEPEST FORMATION REACHED	Heldeberg	Heldeberg	Oriskany	Onondaga	Heldeberg	Heldeberg	Heldeberg	Heldeberg	Oriskany	Oriskany		
RESULT	762 Mcf Gas AF RP 1950 psi in 72 hrs.	2920 Mcf Gas AF RP 3800 psi in 120 hrs.	10,900 Mcf Gas AF RP 3150 psi in 19 hrs.	Sand in top of repeated Onondaga Section 7183- 84 S.S. SW 7263-71 Abandoned	4845 Mcf. Gas AF RP 3025 psi in 8 days	475 Mcf Gas AF RP 3025 psi in 22 hrs.	7500 Mcf. Gas AF RP 3900 psi in 45 hrs.	12,003 Mcf Gas AF RP 3565 psi in 39 hrs.	8678 Mcf Gas AF RP 3565 psi in 39 hrs.	2 Mcf Gas; 120 ft SW in 23 days Abandoned		

table 8
Sheet 3

SUMMARIZED RECORDS OF DEEP WELLS (continued)

COUNTY	Cameron	Cameron	Carbon	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield
MAP NUMBER	21	22	23	24	25	26	27	28	29	30
NAME OF WELL	Pa. tract 100 1	Pa. tract 103 1	Harry Smith 1	DR Harabaugh 1	Merle Marshall 1	CH Prescott 2	Emery L. Salada (Unit Lot Pool) 1	Meredith Avery 1	Houpt Helre 1	F. Kristiansen 1
OPERATOR	WYNG Corp. N-835	Felmont Oil Corp. F-152	Pure Oil Co. 1	WYNG Corp. N-857	WYNG Corp. N-864	The Sylvania Corp. No. 390	Lee E. Minter and WYNG Corp.	M L & H Co. No. 4728	M L & H Co. No. 4729	M L & H Co. No. 4704
TOWNSHIP	Snippen	Lumber	Tawawensing	Burnside	Brady	Sandy	Sandy	Bogge	Bogge	Bogge
QUADRANGLE	Driftwood 107	Emporium 12	Mauch Chunk 1	Curwensville 2	Du Bois 38	Du Bois 37	Du Bois 36	Houtzdale 3	Houtzdale 4	Houtzdale 2
LATITUDE	10,850 ft. S 41°30'	6150 ft. N 41°30'	10,400 ft. N 40°50'	11,200 ft. S 40°50'	18,700 ft. S 41°05'	4900 ft. N 41°05'	8000 ft. N 41°05'	17,100 ft S 41°00'	7900 ft. S 41°00'	15,200 ft. S 41°00'
LONGITUDE	5200 ft. E 78°15'	3600 ft. E 78°10'	11,200 ft. W 75°35'	11,900 ft. W 78°40'	2650 ft. W 78°45'	9500 ft. W 78°45'	4200 ft. W 78°45'	2600 ft. W 78°20'	7200 ft. W 78°20'	3100 ft. W 78°20'
DATE COMPLETED	1-6-62	8-25-62	8-28-62	7-22-62	10-29-62	3-5-62	2-13-62	8-20-62	11-5-62	8-6-62
ELEVATION	1635 KB	1765 DF	625 KB	1740 DF	1677 DF	1556 DF	1473 KB	1950 KB	1680 KB	1987 KB
TULLY	6145 - 6218	6120-6191		7250	6632	6678	6588 - 6689	6900 - 6976	6838 - 6947	7047 - 7147
ONONDAGA	6756	6740		8043	7266	7231	7148	7847	7737	7980
	6765			8050	7286	7251	7159	7868	7756	8002
ORISKANY	6785 SW at 6774	6754 SW at 6774		8130	7344 Gas at 7347-49	7306 27' SW at 7301	7226	7909	7794 SW at 7801	8048
HELDERBERG		6813		8142	7364		7254	7918		8054
SALINA										
GUELPH-LOCKPORT										
MEDINA	RED MEDINA (GRIMSBY)									
	WHITE MEDINA (WHIRLPOOL)									
QUEENSTON										
TOTAL DEPTH	6815	6825	3211	8192	7367	7317	7255	7939	7810	8070
DEEPEST FORMATION REACHED	Oriskany	Helderberg	Onondaga?	Helderberg	Helderberg	Oriskany	Helderberg	Helderberg	Helderberg	Helderberg
RESULT	150 cu ft Gas 40 gal SW Abandoned	3333 ft SW in 18 hrs Abandoned	Dry Abandoned	103 Mcf Gas and 12 gal SW per hr AF R21950 psi in 15 hrs. Abandoned	696 Mcf Gas and some SW, AF R2630 psi in 72 hrs.	Gas blew down to 177 Mcf 150 gal SW in 14 hrs. Abandoned	93 gal. SW per hr. Abandoned	Show of Gas and salt water AF Abandoned	Show of Gas and salt water Abandoned	Small Show of Gas and salt water AF Abandoned

Table 8
SUMMARIZED RECORDS OF DEEP WELLS (continued)

COUNTY	Clinton	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford
MAP NUMBER	31	32	33	34	35	36	37	38	39	40			
NAME OF WELL	Pa Tract 18 6	Robert Harten- bach	T.R. Atwood	Howard Green	Howard Green	Howard Green	W.W. Laurence	W. Lininger	Oscar Newland	S.A. Saunders			
OPERATOR	NYSG Corp. LW 902	Flanigan Bros.	Ann Gas Co. (J. Hoger)	James Drilling Co.	James Drilling Co.	James Sheer	Nick Sevich et al	Transamerican Petroleum Co.	Burnhae Gas Co.	The Sylvia Corp., No 369			
TOWNSHIP	Ledy	Cassewago	Spring	Spring	Spring	Spring	Spring	Spring	Spring	Spring			
QUADRANGLE	Renovo-West 201	Cambridge Springs, 12	Girard 22	Girard 65	Girard 73	Girard 83	Girard 63	Girard 84	Girard 72	Girard 64			
LATITUDE	11,600 ft. S. 41°30'	5150 ft. N. 41°50'	14,500 ft. S. 41°50'	7600 ft. N. 41°45'	9900 ft. N. 41°45'	11,450 ft. N. 41°45'	17,500 ft. S. 41°50'	9150 ft. N. 41°45'	17,600 ft. S. 41°50'	6900 ft. N. 41°45'			
LONGITUDE	11,400 ft. W. 77°045'	7100 ft. W. 80°10'	900 ft. E. 80°20'	3400 ft. E. 80°25'	4000 ft. E. 80°25'	4000 ft. E. 80°25'	11,800 ft. W. 80°20'	8400 ft. E. 80°25'	3550 ft. W. 80°20'	3000 ft. E. 80°25'			
DATE COMPLETED	7-19-62	3-23-62	8-24-62	1-26-62	4-30-62	10-11-62	1-16-62	10-31-62	3-21-62	1-10-62			
ELEVATION	1771 DF	1429 TO	1251 DF	1073 TO	1013 RT	1018 DF	914 DF	953 DF	1221 DF	1087 KB			
TULLY	5455 -	2420 - 2546	2363 -	2105 - 2135	2255 -	2255 -	2156 -	2040 - 2093	2305 -				
ONONDAGA	6263 -	2686 -	2539 -	2340 -	2272 -	2255 -	2156 -	2222 - 2424	2503 -	2364 -			
ORISKANY	6278 -	2926 - 880	2732 - 2744 SW at 2739	2560 - 2565 SW at 2560	2477 -	2500 - 2510 SW	2371 - 2386 SW	2424 - 2434	2715 - 2724	2574 and SW at 2573			
HELDERBERG													
BASS ISLAND		29327-			24957-								
SALINA					2555 -								
GUELPH-LOCKPORT			3530 -		3160 -								
CLINTON			3738 -	3495 - 3576	3430 - 3495 - 3505	3430 - 3490	3323 - 3393 - 3402	3450 - 3453	3730 -	3594 -			
MEDINA	RED MEDINA (GRIMSBY)			3602 -	3531 - 3615	Gas at 3626-90	3430 - 3510	Gas at 3562	Gas at 3778-3833	Gas at 3662-3763			
MEDINA	WHITE MEDINA (WHIRLPOOL)												
QUEENSTON								3661 -		3205 - 33			
TOTAL DEPTH	6306	2941	3821	3729	3683	3750	3522	3729	3878	3827			
DEEPEST FORMATION REACHED	Oriskany	Bass Island	Medina	Medina	Medina	Queenston	Medina	Queenston	Medina	Queenston			
RESULT	Drilled for Gas Storage	Small show of Oil in Oriskany Abandoned	300 Mcf Gas and 90, AF R.P. 920 psi in 24 hrs.	660 Mcf Gas AF R.P. 1150 psi in 48 hrs.	704 Mcf Gas AF R.P. 1120 psi in 14 hrs.	130 Mcf Gas AF R.P. 1020 psi in 20 hrs.	912 Mcf Gas AF R.P. 1040 psi in 24 hrs.	500 Mcf Gas AF R.P. 965 psi in 12 hrs.	150 Mcf Gas AF R.P. 920 psi in 12 hrs.	315 Mcf Gas and 90, AF R.P. 800 psi in 14 hrs.			

Table 8
SUMMARIZED RECORDS OF DEEP WELLS (continued)

COUNTY	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Elk	Elk
MAP NUMBER	41	42	43	44	45	46	47	48	49	50		
NAME OF WELL	Smith 1	Fred Thornton	Homer A. Thornton	Howard Warden	Roscoe Watson 1	Roscoe Watson 1	George Kastla 1	Mike Novak 1	Levi Heidrick 1	Levi Heidrick 2		
OPERATOR	Burnham Gas Co.	The Sylvania Corp. No 394	The Sylvania Corp. No 391	Transamerican Petroleum Co.	The Sylvania Corp. No 392	Transamerican Petroleum Co.	Transamerican Petroleum Co.	Transamerican Petroleum Co.	Lea E. Minter	Lee E. Minter		
TOWNSHIP	Spring	Spring	Spring	Spring	Spring	Spring	Hayfield	Hayfield	Benezette	Benezette		
QUADRANGLE	Girard 81	Girard 77	Girard 69	Girard 88	Girard 74	Girard 85	Meadville 3	Meadville 4	Benezette 283	Benezette 292		
LATITUDE	11,000 ft. N 41° 45'	16,650 ft. S 41° 50'	17,300 ft. S 41° 50'	550 ft. N 41° 45'	16,300 ft. S 41° 50'	11,350 ft. N 41° 45'	8700 ft. S 41° 45'	7700 ft. S 41° 45'	5700 ft. S 41° 25'	5000 ft. S 41° 25'		
LONGITUDE	7500 ft. E 80° 25'	9200 ft. W 80° 20'	6400 ft. W 80° 20'	6300 ft. E 80° 25'	8200 ft. E 80° 25'	6600 ft. E 80° 25'	7000 ft. E 80° 10'	2000 ft. E 80° 15'	3300 ft. E 78° 20'	4800 ft. E 78° 20'		
DATE COMPLETED	8-24-62	6-4-62	3-14-62	12-17-62	4-26-62	11-19-62	7-14-62	10-29-62	1-3-62	9-28-62		
ELEVATION	1005 DF	987 G	1126 KB	1028 KB	KB	991 KB	1272 KB	1244 RT	1197 G	1576 DF		
TULLY	2097 - 2127					2074 -	2638 - 2700	2540 - 2600	5760 - 5860	6122 - 6215		
DNONDAGA	2258 -	2240 -	2396 -	2300 -	2187 -	2242 -	2822 - 3015	2714 -	6365 - 6380	6730 -		
ORISKANY	2474 - 2489 80 & SW 2481	2450 - 2460 SW 2452	2596 - SW	2505 - 2510	2405-2423 SW 2405	2445 -	3015 - 3020 SW	2915 - 2924	6415 - Gas 6413	6775 - Gas 6775		
HELDERBERG												
BASS ISLAND												
SALINA												
GUELPH-LOCKPORT							3738 -	3637 -				
CLINTON												
IRONDEQUOIT	3189 - 3198	3462 - 3471	3624 - 3634	3525 - 3534	3431	3470 - 3480	4002 4081 - 4088	3976 - 3984				
RED MEDINA (GRIMSBY)		Gas at 3528-30	Gas at 3706-44	Gas at 3686	Gas at 3490-3542	Gas at 3546						
MEDINA	Gas at 3548-93	3658										
WHITE MEDINA (WHIRLPOOL)												
QUEENSTON		3673		3739	3640	3681	4306	4196				
TOTAL DEPTH	3593	3693	3785	3795	3648	3706	4315	4236	6428	6791		
DEEPEST FORMATION REACHED	Medina	Queenston	Medina	Queenston	Queenston	Queenston	Queenston	Queenston	Oriskany	Oriskany		
RESULT	1000 Mcf. Gas natural RP 1150 psi in 8 hrs.	280 Mcf. Gas AF RP 800 psi in 14 hrs.	1336 Mcf. Gas AF RP (BF) 1150 psi	1000 Mcf. Gas AF RP 1150 psi in 31 Hrs.	127 Mcf. Gas and 80 AF RP 985 psi in 42 Hrs.	321 Mcf. Gas RP 700 psi in 48 Hrs.	1500 Mcf. Gas AF RP 1000 psi in 10 Hrs. Discovery Well Kastle Pool	600 Mcf. Gas AF RP 1090 psi in 10 Hrs.	2706 Mcf. Gas AF RP 3909 psi in 13 days	9000 Mcf. Gas AF RP 3841 psi in 96 Hrs.		

SUMMARIZED RECORDS OF DEEP WELLS (continued)

table 8
Sheet 6

COUNTY	Elk	Elk	Elk	Erie	Erie	Erie	Erie	Erie	Erie	Erie
MAP NUMBER	51	52	53	54	55	56	57	58	59	60
NAME OF WELL	Merle I StJohn 1	Merle I StJohn 2	Vanco 2	Vanco 3	Vanco 4	Homer Adams 1	Babb 1	Rena Barker 1	J. A. Dude 1	J. A. Dude 1
OPERATOR	NYSNG Corp. N-81	NYSNG Corp. N-854	Flanigan et al	Flanigan et al	Flanigan and Pa. Gas Co.	Pa. Gas Co. No. 1599	Paul Britton et al	Paul Britton et al	Grantley Co.	Newtec Oil and Gas Co.
TOWNSHIP	Benezette	Benezette	Washington	Washington	Washington	Elk Creek	Conneaut	Conneaut	Elk Creek	Elk Creek
QUADRANGLE	Benezette 285	Benezette 287	Cambridge Springe 13	Cambridge Springe 14	Cambridge Springe 15	Girard 68	Girard 76	Girard 82	Girard 79	Girard 86
LATITUDE	5200 ft. S. 41°25'	5300 ft. S. 41°15'	12,800 ft. S. 41°55'	11,400 ft. S. 41°55'	12,750 ft. S. 41°55'	11,650 ft. S. 41°55'	16,000 ft. S. 41°55'	8400 ft. S. 41°55'	11,000 ft. S. 41°55'	13,000 ft. S. 41°55'
LONGITUDE	1400 ft. E. 78°20'	1100 ft. W. 78°05'	4500 ft. W. 80°10'	4500 ft. W. 80°10'	5700 ft. W. 80°10'	3400 ft. E. 80°20'	1200 ft. E. 80°30'	2000 ft. W. 80°30'	2900 ft. W. 80°20'	2500 ft. W. 80°20'
DATE COMPLETED	4-14-62	6-14-62	7-27-62	8-16-62	10-30-62	3-9-62	5-23-62	1-12-62	6-19-62	11-21-62
ELEVATION	1708 DF	1693 DF	1470 DF	1458 RT	1444 DF	1128 DF	974 DF	906 DF	973 DF	1002 RT
TULLY	6185 - 6282	6175 - 6265	2477 - 2525	2435 -	2436 - 2505		1792 - 1796			1854 - 1878
ONDONAGA	6802 - 6819 - Chert 6813 -	6800 - 6813 - Chert 6813 -	2674 -	2655 -	2652 -	2203 -	1947 -	1852 -	2040 -	2035 -
ORISKANY	6857 - Gas at 6865	6853 - Gas at 6854	2917 - SO and SRO	2918 -	2907 - 2908	2456 - 2470 SW at 2466	2238 - SW	2133 -	2300 - 2310 SW	2292 - 2292 - 2310 SW at 2305
HELDERBERG	6874 -	6864 -								
BASS ISLAND			2942 -		2908 -	2470 -		2156 SW		
SALINA							2325?	2250 -		
GUELPH-LOCKPORT							2838 -	2715 -		
CLINTON							3108 -	2984 -	3156 -	
							3172 - 3186	3048 - 3061	3224 - 3236	3240 -
							3432 - 3524	3073 -	3260 -	
							Gas at 3475	Gas at 3267-75	Gas et 3283	Gas et 3352-54
							3515			
							3582 -			
							3604 -			
							3612	3191	3367	3479
TOTAL DEPTH	6857	6866	2953	2935	2925	3612	3345	3191	3367	3479
DEEPEST FORMATION REACHED	Helderberg	Helderberg	Bass Island	Bass Island	Bass Island	Queenston	Medine	Medine	Medine	Queenston
RESULT	3373 Mcf Gas and SW, AF RP 1410 per in 85 hrs.	32 Mcf Gas and SW, AF Abandoned	4 Mcf Gas and some oil Abandoned	Dry Abandoned	Dry Abandoned	175 Mcf Gas RP 816 per in 41 hrs.	1000 Mcf Gas AF RP not taken	2240 Mcf Gas AF RP 680 per in 24 hrs.	100 Mcf Gas AF RP 1050 per in 18 hrs.	6000 Mcf Gas AF RP 1005 per in 18 hrs.

table 8
SUMMARIZED RECORDS OF DEEP WELLS (continued)

COUNTY	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie
MAP NUMBER	61	62	63	64	65	66	67	68	69	70		
NAME OF WELL	Fish 1	Goodrich 1	R. Henstreet 1	McCreedy 1	Pa Game Comm Tract 101 A, 2	Randall 1	Simmons 1	Wolf 1	George R. Hoag 1	Daniel Harper 1		
OPERATOR	Paul Britton	Grantley Co.	Pa Gas Co. No. 1600	Paul Britton et al	Felmont Oil Corp. F-156	Worldwide Petroleum Co.	Lake Shore Pipe Line Co.	Worldwide Pet. Co. & Britton	Texaco, Inc.	The Peoples Nat. Gas Co. & Shree & Eberly		
TOWNSHIP	Conneaut	Conneaut	Conneaut	Conneaut	Conneaut	Conneaut	Conneaut	Conneaut	enango	Dunbar		
QUADRANGLE	Girard 80	Girard 86	Girard 75	Girard 70	Girard 87	Girard 71	Girard 67	Girard 78	North East 29	Uniontown 38		
LATITUDE	14,700 ft. s. 41°55'	15,000 ft. s. 41°55'	7000 ft. s. 41°55'	8100 ft. s. 41°55'	18,000 ft. s. 41°55'	9100 ft. s. 41°55'	16,250 ft. s. 41°55'	12,500 ft. s. 41°55'	16,800 ft. s. 42°05'	18500 ft. s. 39°55'		
LONGITUDE	6900 ft. E. 80°30'	1600 ft. W. 80°30'	8600 ft. E. 80°30'	6500 ft. W. 80°25'	3700 ft. E. 80°30'	10,550 ft. W. 80°25'	5500 ft. E. 80°30'	9800 ft. W. 80°25'	17,600 ft. W. 79°45'	14,200 ft. W. 79°30'		
DATE COMPLETED	6-20-62	2-27-62	5-3-62	3-21-62	12-6-62	4-18-62	3-8-62	6-19-62	11-11-62	1-26-62		
ELEVATION	962 DF	940 DF	912 DF	922 DF	965 DF	937 DF	968 KB	937 DF	1556 DF	2250 KB		
TULLY	1778 - 1783						1842 - 1847	1750 - 1760	2470 - 2545	6963 - 7055		
ONDODAGA	1938 -	1900 -	1846 -	1892 -	1972 -	1897 -	1950 -	1918 -	2700 -	7980 -		
ORISKANY	2231 -		2133 SW	2164 -	2860 - 2260 SW	2174 -	2246 SW	2193 -	2922 -	8192 -		
HELDERBERG												
BASS ISLAND	2242 -		2140 -	2174 -	2270 -	2184 -	22597 -	SW at 2205	2922 -			
SALINA	2316 -			2249 -		2260 -	2334 -	2282 -	3000 -			
GUELPH-LOCKPORT	2832 -			2766 -		2775 -	2842 -	2799 -	3462 -			
CLINTON	3107 - 2185	3123 - 3145	3066 - 3080	3038 - 3104	3179 - 3192	3050 - 3118	3110 - 3190	3074 - 3140	3730 - 3796	3408		
RED MEDINA (GRIMSBY)	3206 - 3264 Gas at 3206	3165 - Gas at 3214 - 52	3096 - Gas at 3148 - 3217	3136 - Gas at 3174 - 82	Gas at 3269 - 87	3150 - Gas at 3216 - 17	3204 - 3249 Gas at 3243	3172 - Gas at 3243	3827 - 3936	3862-3928		
WHITE MEDINA (WHIRLPOOL)												
DUEKENSTON							3372 -		3960 -			
TOTAL DEPTH	3336	3252	3238	3230	3318	3249	3417	3280	4010	8288		
DEEPEST FORMATION REACHED	Medina	Medina	Medina	Medina	Medina	Medina	Queenston	Medina	Queenston	Heilderberg		
RESULT	1361 Mcf gas R.P. 940 psi in 24 hrs.	1300 Mcf gas R.P. 1025 psi in 24 hrs.	499 Mcf gas R.P. 740 psi in 15 hrs.	750 Mcf gas R.P. not taken	500 Mcf gas R.P. 980 psi in 14 hrs.	1500 Mcf gas R.P. not taken	1250 Mcf gas R.P. 1000 psi in 20 hrs.	250 Mcf gas R.P. 850 psi in 13 hrs.	14 Mcf gas Abandoned	Hamilton section faulted salt watered Abandoned		

table 8
Sheet 8

SUMMARIZED RECORDS OF DEEP WELLS (continued)

COUNTY	Indiana	Indiana	Indiana	Indiana	Lycoming	Lycoming	Mokane	Mokane	Northumberland	Potter
MAP NUMBER	71	72	73	74	75	76	77	78	79	80
NAME OF WELL	H. C. Graham	C. McClain	Frank Horton	Preston Lippert Pa. Tract 101	J. F. Stryker		Freeman	Minard Run No. 1	Hallbish	North Penn Gas Co.
OPERATOR	Felmont Oil Corp NYSNG Corp	MLEH Co. No. 4703	NYSNG Corp N-856	NYSNG Corp N-818	NYSNG Corp N-836	Felmont Oil Corp F-112	Kendall Refining Co.	Minard Run Oil Co.	E. T. Matthews	Felmont Oil Corp F-150
TOWNSHIP	Buffington	Center	Banks	Grant	Brown	Cogan House	Bredford	Bredford	Point	Sylvania
QUADRANGLE	Barnesboro 15	Indiana 11	Punxsutawney 36	Punxsutawney 37	Renovo East 15	Trout Run 3	Bredford 5	Bredford 6	Sunbury	Emporium
LATITUDE	7300 ft. N 40°30'	10,000 ft. S 40°35'	1300 ft. S 40°50'	7600 ft. S 40°50'	10,400 ft. S 41°30'	1950 ft. N 41°25'	6500 ft. S 41°55'	15,650 ft. S 41°55'	4200 ft. S 40°55'	500 ft. N 41°35'
LONGITUDE	11,150 ft. W 78°55'	13,000 ft. W 79°05'	10,500 ft. W 78°50'	3050 ft. E 79°00'	4700 ft. E 77°35'	5400 ft. W 77°10'	4200 ft. E 78°40'	8600 ft. W 78°35'	2800 ft. E 76°50'	11,200 ft. W 78°00'
DATE COMPLETED	5-25-62	7-23-62	6-4-62	8-9-62	2-16-62	3-5-62	3-8-62	8-1-62	3-23-62	6-15-62
ELEVATION	1858 K B	1123 K B	1781 D F	1383 K B	2086 D F	1556 R T	1531 D F	2240 D F	704 G	1348 D F
TULLY	7664 - 7695	6925 - 6946	7031 -	6467 - 6604	6845 - 6963	5830 - 5930	3762 - 3783	Hamilton 4640 Onondaga 5051 Oriskany 5160 Helderberg	Tully 673 Hamilton 750 Onondaga 2684 Needmore 2760 Oriskany 2968	5492 - 5545 6142 -
ONONDAGA	8453 - 8463 - SG at 8522	7553 - 7573 -	7745 - 7755 -	7104 - 7117 - SG	7798 -	7040 -	4123 -	Salina 5240 McKenzie 6049 Lockport 6170 Clinton 6380 Red Medina 6530	Shriver 2983 Mandata 3042 New Scotland 3187 Stormville 3206 Goeymans 3206 Keyser 3212 Tonoloway 3602	6153 - SG
ORISKANY	8570 -	7696 -	7839 -	7214 - SG	7832 -	7112 -	4185 -	Queenston 6674 Oswego 7920 Reedsville 8030	Stormville 3206 Goeymans 3206 Keyser 3212 Tonoloway 3602	6177 -
HELDERBERG	8594 -		7842 -	7224 -	7869 -	7216 -	4198 -	Reedsville 8030 Utica 8968 Trenton 9030 Black River 9400 Chazy 9750 Little Falls 9905	Wills Creek 4727 Bloomburg 5398	
SALINA										
GUELPH-LOCKPORT										
MEGNA										
MEGNA										
QUEENSTON										
TOTAL DEPTH	8612	7735	7930	7255	7899	7227	4297	11,491	5504	6210
DEEPEST FORMATION REACHED	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Bass Island	Red Arkosic Potadam	Bloomburg	Helderberg
RESULT	76 Mcf Gas and Salt Produced for 12 days Now Shut In	Salt Water Abandoned	327 Mcf Gas at 7125 Dry Abandoned	SG from Oriskany at 7125 Dry Abandoned	Dry Abandoned	SG & SW - in Oriskany - plugged back to Bradford Third Sand. 108 Mcf Gas	SG & SW - in Oriskany - plugged back to Bradford Third Sand. 108 Mcf Gas	Show of Gas at about 10,000 Not Flushed	Dry Abandoned	Small Show Gas and Salt Water AF

SUMMARIZED RECORDS OF DEEP WELLS (continued)

Table 8
Sheet 9

COUNTY	Potter	Potter	Potter	Potter	Potter	Potter	Potter	Potter	Potter	Potter	Potter	Potter
MAP NUMBER	81	82	83	84	85	86	87	88	89	90		
NAME OF WELL	Sorogzy 1	C.W. Cornburn 1	Ernest Fairman et al, No. 1	R.D. Gibson 1	M.D. Hooley 1	M.D. Hooley 2	Alvin Lounabury 1	Lyle Tarbox 1	Charles Wallis 1	Pa. Treat 18 7		
OPERATOR	Fairman Drilling Co.	Fairman Drilling Co.	Fairman Drilling Co.	Fairman Drilling Co.	Fairman Drilling Co.	Fairman Drilling Co.	Fairman Drilling Co.	Fairman Drilling Co.	NYSG Corp. and Fairman Drig Co	NYSG Corp. LM-903		
TOWNSHIP	Bingham	Ulysses	Ulysses	Ulysses	Ulysses	Ulysses	Ulysses	Ulysses	Ulysses	Stewardson		
QUADRANGLE	Gainese 106	Geneese 142	Geneese 146	Geneese 144	Geneese 145	Geneese 147	Geneese 143	Geneese 137	Geneese 141	Renovo West 200		
LATITUDE	600 ft. N. 41°55'	16,080 ft. S. 41°55'	11,400 ft. S. 41°55'	17,750 ft. S. 41°55'	8600 ft. N. 41°50'	18,400 ft. S. 41°55'	14,300 ft. S. 41°55'	13,200 ft. S. 41°55'	10,700 ft. N. 41°50'	5850 ft. S. 41°30'		
LONGITUDE	3100 ft. E. 77°45'	14,200 ft. W. 77°45'	8600 ft. W. 77°45'	5000 ft. E. 77°50'	200 ft. E. 77°50'	2100 ft. E. 77°50'	7800 ft. W. 77°45'	12,800 ft. W. 77°45'	7600 ft. E. 77°50'	9150 ft. W. 77°45'		
DATE COMPLETED	11-26-62	6-25-62	10-15-62	8-30-62	9-19-62	11-5-62	7-28-62	ref. 5-12-62	1-30-62	8-31-62		
ELEVATION	2240 G	2406 DF	2143 KB	2421 DF	2381 KB	2380 DF	2357 DF	2160 G	2401 G	1932 DF		
TULLY	4801	4626 - 4674	4462 - 4525	4638 - 4693	4595 - 4670	4658 - 4720	4575 - 4645	4491 - 4538	4486 - 4533	5665 -		
ONONOGA LIMESTONE CHERT	5470 -	5295 -	5121 -	5298 -	5248 -	5315 -	5243 -	5132 -	5146 -	6485 -		
ORISKANY	5496 -	5315 -	5136 -	5314 - Gas at 5325	5264 - Gas at 5276	5334 - Gas at 5344	5254 - Gas at 5258	5158 - Gas at 5170	5170 - Gas at 5182	6501 -		
HELOERBERG	5525 -	5331 -	5156 -	5342 -	5290 -	5362 -	5276 -					
SALINA			5330 -									
GUELPH-LOCKPORT												
MEADINA RED MEADINA (GRIMSBY)												
WHITE MEADINA (WHIRLPOOL)												
QUEENSTON												
TOTAL DEPTH	5540	5336	5526	5360	5320	5392	5305	5192	5192	6539		
DEEPEST FORMATION REACHED	Helderberg	Helderberg	Salina	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg	Helderberg		
RESULT	Dry Abandoned	189 Mcf Gas AF R.P. 2088 psi in 43 hrs.	12 Mcf Gas after acidizing Oriskany & Helderberg-Plugged back to 1700. 250 Mcf Gas - RP 280psi-54hrs.	380 Mcf Gas AF R.P. 2100 psi in 72 hrs.	65 Mcf Gas AF R.P. 1300 psi in 7 days	444 Mcf Gas AF R.P. 2185 psi in 4 days	140 Mcf Gas AF R.P. 1170 psi in 5 days	Originally drilled in 1957 180 Mcf Gas-AB R.P. 2135 psi, in 5 days Discovery Well Newfield Pool	13 Mcf Gas Abandoned R.P. 2780 psi in 5 days Drilled for - Gas Storage	30,370 Mcf Gas natural R.P. 2780 psi in 5 days Drilled for - Gas Storage		

SUMMARIZED RECORDS OF DEEP WELLS (continued)

Table 8
Sheet 10

COUNTY	Somerset	Somerset	Somerset	Tloga	Tloga	Warren	Westmoreland	Westmoreland	Westmoreland
MAP NUMBER	91	92	93	94	95	%	97	98	99
NAME OF WELL	V. Bearer	Pa Tract 95	Robt Henninger	Northwest Mining Company No.1	F. Rachel	Quaker State Off Highway Co. (Leahbrown)	C. E. Hribal	Edward Lentz	Joseph Kahl
OPERATOR	The Peoples Nat. Gas Co. et al	Phillips Petroleum Co.	Galveston Oil Corp. Peoples Nat. Gas Co.	Harry Brunt	Ryan Oil Co.	Biery and Johnson Co.	Felmont Oil F-151	The Peoples Nat. Gas Co. No. 4297	The Peoples Nat. Gas Co. No. 4295
TOWNSHIP	Jennar	Jefferson	Quemehoning	Duncan	Westfield	Limestone	Mt. Pleasant	Unity	Derry
QUADRANGLE	Somerset 25	Somerset 26	Winber 2	Blossburg 1	Oaines 105	Tidioute 7	Donegal 30	Donegal 29	Latrobe 12
LATITUDE	1800 ft. S 40'10"	10,300 ft. N. 40'05"	4200 ft. N. 40'05"	4700 ft. N. 41'40"	10,600 ft. S. 41'55"	900 ft. S. 41'40"	300 ft. N. 40'10"	1100 ft. S. 40'15"	100 ft. S. 40'25"
LONGITUDE	13,400 ft. W. 79'05"	8000 ft. W. 79'10"	1200 ft. E. 79'00"	7900 ft. W. 77'10"	4200 ft. W. 77'55"	11,250 ft. W. 79'20"	8000 ft. E. 79'30"	10,200 ft. W. 79'20"	6500 ft. E. 79'20"
DATE COMPLETED	3-11-62	3-18-62	4-26-62	1-3-62	1-26-62	4-12-62	8-17-62	6-3-62	10-23-62
ELEVATION	2558 KB	2801 KB	2031 KB	1680 O	1672 KB	1722 DF	1506 KB	1800 KB	1243 KB
TULLY	Hamilton 7872 -	Hamilton 8023 -	Hamilton 7851 -	6240 -	4420 - 4470	4154 -	7194 -	6752 - 6824	7019 - 7036
ONONDAGA	LIMESTONE	9004 -	8902 -	7290 -	5146 -	4438 -	7770 -	7396 -	7558 -
CHERT		9032 -	8948 -			80	7790 -	7410 -	7577 -
ORISKANY		9205 -	9111 -	7310 -	5166 -	4514 -	7930 -	7708 -	7708 -
		Shriver 9242 -	20 Mcf Gas and SW at 9200 -	7360 -	5181 -	4528 -	Shriver 7964 -	Gas at 7710 -	Shriver 7661 -
HELDERBERG									
SALINA									
GUELPH-LOCKPORT									
MEGONA						5795 -			
						80			
WHITE MEDINA (WHIRLPOOL)									
QUEENSTON						5985 -			
TOTAL DEPTH	8415	9259	9213	7414	5195	6009	8014	7482	7739
DEEPEST FORMATION REACHED	Hamilton	Oriskany	Oriskany	Helderberg	Helderberg	Queenston	Oriskany	Onondaga	Oriskany
RESULT	Burlett 7680 - Faulted in Hamilton Abandoned	Burlett 7957 - Plugged back to 90 Mcf Gas and SW, AF Abandoned	757 Mcf Gas and SW at 9200 - 45 hrs.	Dry Abandoned	Dry Abandoned	400 Mcf Gas AF in Grimsby R. P. 660 psi	3000 Mcf Gas AF in chert R.P. 3340 psi in 41 hrs. Discovery Well Hribal Pool	Show of Gas & 700 ft. SW in chert Abandoned	9500 Mcf Gas AF R.P. 4372 psi in 48 hrs. Discovery Well Kahl Pool
						R. P. 660 psi	Discovery Well Hribal Pool	Abandoned	Selt Water AF Abandoned

Table 8
SUMMARIZED RECORDS OF DEEP WELLS (continued)

COUNTY	Westmoreland	York	York	York	Bedford			
MAP NUMBER	101	102	103		104			
NAME OF WELL	Edward Bgonz 1	Kicker 1	Miller 1		Hillegas 1			
OPERATOR	Felaont Oil Corp. et al. F-141	Sheppard Donelson Co.	Miller Wright- Stone&Shearer		South Penn Oil Co.			
TOWNSHIP	Fairfield	Paradies	Monogahan		Napier			
QUADRANGLE	New Florence 18	Hanover 2	New Cumberland 1		Bedford 2			
LATITUDE	7650 ft. N. 40°15'	10,200 ft. S. 40°55'	18,400 ft. S. 40°10'		10,600 ft. N. 40°00'			
LONGITUDE	1600 ft. E. 79°05'	9000 ft. W. 76°55'	9000 ft. W. 76°55'		800 ft. W. 78°40'			
DATE COMPLETED	1-19-62	7-13-62	10-26-62		1930?			
ELEVATION	2589 KB	620 G	540 G		1215 G			
TULLY	6925 - Hamilton 6933							
ONONDAGA	LIMESTONE CHERT	7674 - 7691 -						
ORISKANY					Oriskany 90 - Shriver 135 -			
HELDERBERG					Holderberg 245 Tonoloway 500			
SALINA					Wills Creek 3410 - 2450 -			
GUELPH-LOCKPORT					McKenzie 3150 - Keefe 3613 - Rose Hill 3635 -			
MEDINA	RED MEDINA (GRIMSBY)							
	WHITE MEDINA (WHIRLPOOL)							
QUEENSTON								
TOTAL DEPTH	7720	1800	3509		4226			
DEEPEST FORMATION REACHED	Onondaga	Triassic	Triassic		Rose Hill			
RESULT	11 Waf 866 930 ft. SW in 8 hrs. Abandoned	Diabase, O-930 Triassic sediments 930 - 3509	Faults at 1650, 1940, 2450 Gamma Ray Log run in 1950 Well record not previously pub.					

TABLE No. 9 Deep Well Samples Collected during 1962
(Supplement to information Circular 16 and Progress Reports 157, 158, & 160)

COUNTY Quadrangle & No.	Operator	Farm Name	Total Depth	Year Compl.	Sampled Interval	Deepest Formation Sampled
BEDFORD						
Clearville 10	N. Y. State Nat. Gas #845	W. C. Davis Est	5,788	62	0-5788	Oriskany
BLAIR						
Hollidaysburg 2	Hollidaysburg	Rankey #1	5,010	62	600-5010	Clinton
BRADFORD						
Monroeton 2	Pure Oil Co.	Charles Blemle	12,843	62	20-12,817	Tuscarora
Towanda 3	Fairman et al	H. W. Lundy #1	6,604	63	Samples not yet cut	
CAMBRIA						
Patton 1	Peoples Nat. Gas #4361	J. Leiden Hrs.	8,230	62	700-8225	Helderberg
CAMERON						
Driftwood 107	N. Y. State Nat. Gas #835	Pa. Tract 100 #1	6,815	62	5200-6200	Oriskany
Driftwood 108	Fairman Drlg.	New Bethlehem Rod & Gun Club #1	6,154	62	0-6139	Oriskany
Emporium 12	Felmont Oil F 152	Pa. Tract 103 #1	6,825	62	200-6825	Helderberg
CLEARFIELD						
Curwensville 2	N. Y. State	G. R. Rorabaugh	8,192	62	18-8192	Helderberg
Houtzdale 2	Mfr. Lgt. & Ht. #4704	F. Kristiansen #1	8,070	62	1000-8070	Helderberg
Houtzdale 3	Mfr. Lgt. & Ht. #4728	Meredith Avery #1	7,939	62	800-7862	Onondaga
Houtzdale 4	Mfr. Lgt. & Ht. #4729	Haupt Hrs #1	7,810	62	Samples not yet cut	
Penfield 245	Felmont Oil Corp. F 108	Deemer-Green Glen #5	7,309	60	55-7309	Oriskany
Penfield 266	N. Y. State Nat. Gas Corp. #782	John R. Potter #1	7,637	60	6300-7635	Onondaga
CLINTON						
Howard 3	Phillips Pet.	Pa. Tract 102 #1	8,467	63	0-8467	Oriskany?
CRAWFORD						
Andover 19	J. McCluskey	Fred D. Carter #1	3,931	61	2451-3943?	Queenston
Cambridge Springs 10	Atlas Expl. Co.	Joe Hindle #1	4,336	61	3050-4245	Medina

TABLE NO. 9 Deep Well Samples Collected during 1962 Cont.

COUNTY Quadrangle & No.	Operator	Farm Name	Total Depth	Year Compl.	Sampled Interval	Deepest Formation Sampled
ERIE						
Girard 56	Pa. Gas Co. #1596	L. Rossiter #1	3,298	61	Samples not yet cut	
Girard 61	Pa. Gas Co. #1598	J. Harrington #1	3,302	61	Samples not yet cut	
North East 29	Texaco, Inc.	Hoag #1	4,009	62	60-4010	Queenston
Union City 4	Apache Oil Co.	P. Tomcho #1	4,139	61	Samples not yet cut	
FAYETTE						
Uniontown 38	Peoples N.G. & Snee & Eberly	D.I. Harper #1	8,288	62	2230-8055	Onondaga
INDIANA						
Barnesboro 7	Felmont Oil Corp.	Herman George #1	8,432	58	8278-8420	Helderberg
Barnesboro 15	Felmont Oil Corp. #F143	H. C. Graham #1	8,612	62	4490-8614	Helderberg
Indiana 9	Felmont Oil	Alwine #1	8,447	60	780-8445	Oriskany
Indiana 11	Mfr. Lgt. & Ht. #4703	C. McClain	7,735	62	0-7735	Oriskany
Punxsutawney 36	N. Y. State Nat. Gas Corp. #856	Frank Horton #1	7,930	62	20-7755	Onondaga
LYCOMING						
Trout Run 3	Felmont Oil Corp. F142	J. F. Stryker #1	7,277	62	5700-7220	Helderberg
MCKEAN						
Bradford 5	Kendall Ref'g Co. A-02	Freeman #1	4,297	62	1226-4288	Bass Island
NORTHUMBERLAND						
Sunbury 2	E. Tom Matthews	Hillbish #1	5,804	62	425-5804	Bloomsburg
POTTER						
Emporium 11	Felmont Oil Corp. F150	North Penn Gas Co. #1	6,210	62	40-6210	Helderberg
SOMERSET						
Confluence 11	Mfr. Lgt. & Ht. & Snee & Eberly	E & M Rugg #1	8,368	61	6730-8365	Helderberg
Windber 2	Felmont Oil Corp. F146	Robert Hennin- ger #1	9,213	62	7600-9213	Oriskany
TIOGA						
Blossburg 1	Harry Brunt	Northwest Min- ing #1	7,414	62	7200-7414	Helderberg
Gaines 105	Ryan Oil Co.	F. Rachael #1	5,195	62	10-5195	Helderberg
WESTMORELAND						
Donegal 30	Felmont Oil Corp. F151	C. E. Hribal #1	8,014	62	Sample not yet cut	